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TRANSACTIONS

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

THE AGRICULTURE OF THE COUNTY OF RENFREW,

By ALEXANDER MACDONALD, Sub-Editor, *North British Agriculturist*,
Edinburgh.

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Introduction.

THE small industrial county of Renfrew has a circumference of some 80 miles. With an area of about 254 square miles, it stands twenty-seventh among the thirty-three Scotch counties, and in order of valuation it ranks sixth. Its total acreage is 162,428, of which 2021 acres are foreshores, and 3621 acres covered by water; while it has a gross valuation of £676,101, inclusive of railways and other public undertakings. Of the land area nearly two-thirds are under cultivation, the remainder being hill grazings, waste grounds, or occupied by buildings and roads.

Lying between 55° 40' 40" and 55° 58' 10" N. lat., and 40° 13' and 4° 52' 30" W. long., the county assumes an irregular oblong form, the axis of which runs parallel to the river Clyde. It skirts Lanarkshire on the east and north-east, Ayrshire on the south, and it is separated from Dumbartonshire on the north and Argyllshire on the west by the Firth of Clyde.

It embraces sixteen parishes—which we shall have occasion to name afterwards—inclusive of small portions of Beith and Dunlop parishes attaching on the south side, and Govan on the north-east. Though somewhat uneven, its surface is less rugged than that of the neighbouring counties. There are no hills of sufficient height to rank as mountains. The southern and western districts, however, are interspersed with lochs and

mosses, and dotted with hills of various heights. Four peaks in the parish of Eaglesham average well-nigh 1000 feet, but the loftiest summits are Mistylaw and Hydall, in the parishes of Lochwinnoch and Kilmalcolm, the former rising to 1663 feet and the latter to 1244 feet above sea-level. Irrespective of height, the most clearly defined ranges are those of Fereneze and Gleniffer, which extend from Levern Valley, in Neilston, through the Abbey parish to the western border of Lochwinnoch. This formation renders the climate generally moist, though by no means severe. To the scenery, too, it lends variety, and the county is thus possessed of something more than objects of mere historical interest. It participates in the finest of Scottish scenery, and from several of the hills, notably those in Inverkip and in the neighbourhood of Greenock, magnificent views are obtained.

Like most maritime counties, Renfrewshire might be classified in two divisions—low-lying and upland—but agriculturally it resolves itself more strikingly into three districts; that is to say, its agricultural resources can best be described as we find them regulated by the elevation, character, and quality of the land. The three divisions—hilly, gentle-rising, and the flat—differ materially not only in character of surface and soil, but also in the modes of farming adopted. The hilly district is chiefly bleak moorland, the gentle-rising division embraces many well cultivated as well as good pastoral farms and finely-wooded heights, while the flat district, known locally as the "Laich Lands," has for many years produced magnificent crops of grain, fodder, and roots.

As may be inferred from the fact that as late as 1872 there were no fewer than 3215 proprietors, the land is still pretty largely divided. In that year 148,679 acres, valued at £396,655, 16s., were owned by 657 proprietors of 1 acre and upwards, while 2558 owners of less than 1 acre shared among them 1242 acres, having a united value of £165,155, 7s. This estimate was substantially corroborated by a statistical return in 1879, which shows that 155,321 acres, with a total gross rental of £990,898, were divided among 5735 proprietors. One owner held 24,951 acres, with a rental of £14,801; two together owned 27,775 acres, yielding a united rental of £27,059; one 6500 acres valued at £5562; thirteen possessed 44,625 acres, of which the total rental was £65,977; eight shared 12,128 acres, and a rental of £28,963; seven held 4793 acres, worth £17,972; and ninety derived £174,018 from their united possessions of 19,651 acres.

Historically, Renfrewshire is peculiarly interesting. It has given to Scotland some of her most valiant defenders, including the heroic Wallace, and stands prominent in history as one of

the ancient residences of the Stewarts. In 1164 it was the scene of a desperate battle occasioned by the rebellion of Somerled—the Lord of the Isles—against King David I. The engagement took place near the Knock, when the brawny men of Strathgryffe (the ancient name for Renfrew), under the command of High Steward Walter, are said to have routed the troops of Somerled and killed their leader. A similar affray occurred in the reign of Alexander III., when Haco, king of Norway, who landed near Largs with an army, suffered a crushing defeat. Nor, unfortunately, was this all. Victory was not always assured. The men of Renfrewshire, who took part in the defence of Queen Mary, were repelled by the invading troops of Regent Murray at Langside in 1568. And this was followed by a similar rebuff in 1685. In that year a protracted struggle occurred near Inchinnan Bridge between the troops of King James VII. and some 1500 discontented Scots from abroad, led by the Marquis of Argyll. The Marquis was captured, brought to Edinburgh, and executed; but this did not prevent his little army from accomplishing their purpose. They entrenched themselves in the neighbourhood of Hill Port, and with marvellous valour and persistent fight ultimately succeeded in annihilating the king's troops. This result may be said to have ended the troublesome times of the inhabitants of the county, and they have since then, or rather since the Union, to which they were reluctant in acceding, devoted themselves to peaceful arts and manufactures. They have established one of the most extensive shipbuilding trades in the empire, and their ships plough the waves of every sea. In other industries, too, they occupy a first place. Their manufactures are prized at home and abroad, and have made for themselves a name in the "far-off islands of the sea."

Renfrewshire is studded with towns and populous hamlets, the former numbering twelve and the latter about thirty. The only royal burgh is Renfrew, which, together with Port-Glasgow, returns a member to Parliament. Paisley and Greenock have each a representative in Parliament, while the county returns two members to St Stephen's. One of the most striking features of the county is the large number of mansions which adorn its sylvan slopes and vales, and the thriving appearance imparted to it by the innumerable handsome residences recently erected by Glasgow gentlemen.

There is no lack of facilities of transport. The county is well supplied with roads, railways, and navigable waters. It is intersected by several main public roads from Glasgow, and is provided with railway communication by both the Caledonian and Glasgow and South-Western Companies. The bed of the old Glasgow and Paisley Canal has been converted into a rail-

way; but a considerable traffic connected with the agricultural, as well as the industrial institutions of the county, is carried by steamboats on the Clyde.

A large number of streams and lochs and a considerable extent of moorland are to be met with. Renfrewshire affords good grouse and lowground shooting, and many anglers are to be seen on the streams, though the sport is not very great. At one time the rivers afforded good sport, but now they are largely rendered destructive to fish life through pollution from public works. The principal rivers are the White Cart, the Black Cart, and the Gryffe. The first named rises in the south-east corner of Eaglesham, and flows in a northerly direction, and after receiving numerous "feeders" unites with the Black Cart and the Gryffe at Inchinnan Bridge, and falls immediately into the Clyde. The Black Cart has for its source Castle Semple Loch, and is largely increased in its north-easterly course by the influx of several streams. Rising on the north side of Creuch Hill the Gryffe has a course of about 20 miles, and yields good fishing, but is not open to the public. Among the other streams are the Calder, which rises in the Hill of Stako, and after a run of 8 miles empties itself into Castle Semple Loch, yielding trout varying in weight from $\frac{1}{4}$ to 2 lbs. each; the Earn, rising mainly in Binnen Loch, a 7 miles long tributary of the White Cart; and the Daff, a little stream in the parish of Inverkip, &c.

The lochs are numerous but not large. Castle Semple Loch, in Lochwinnoch, is 2 miles long by 1 broad; Brother Loch and Black Loch, in Mearns, are each about 2 miles in circumference; Loch Libo, in Neilston, covers about 16 acres; Long Loch, between Mearns and Neilston, is about $1\frac{1}{2}$ miles long by $1\frac{1}{4}$ miles broad; and Loch Thom, in the parish of Inverkip, is $1\frac{1}{2}$ miles long by $1\frac{1}{2}$ miles broad. Besides these are Loch Binnen and Goin, in Eaglesham; Queenside Loch, in Lochwinnoch; and several large reservoirs, such as Stanley and Harlaw, for supplying the various towns with water. The lochs occasionally yield good baskets of pike, perch, eels, and trout of moderate size, while salmon are sometimes to be got along the shores of the Clyde.

The little western county is well wooded. Ancient records denote that it has been so from a very early date, and there has always been a tendency among proprietors to maintain their plantations creditably. Very little new land has been laid under wood for many years, but the old plantations have been well managed, and, excepting garden land and shrubberies, there are at present 5424 acres occupied by trees. Orchard grounds extend to 53 acres, having increased 16 acres since 1884. There are 135 acres of land used by market gardeners,

or 4 acres less than in 1884; while 69 acres are occupied by nurserymen for the propagation of trees and shrubs.

Population.

Though of comparatively small extent, Renfrewshire contests with Edinburgh the distinction of being the most densely populated county in Scotland, each giving as many as 1075 persons to the square mile. At last census (in 1881), the western county contained in all 263,374 people, of whom 226,073 inhabited towns, 19,044 villages, and 18,257 rural habitations. The number of inhabitants at the end of each decade since 1791 was as follows:—

Year.	Population.
1791,	62,853
1801,	78,501
1811,	93,172
1821,	112,175
1831,	133,443
1841,	155,072
1851,	161,091
1861,	177,561
1871,	216,947
1881,	263,374

A steady and substantial increase is thus indicated, there having been an enormous advance of 200,521 during the past ninety years. This is mainly due to the development of the industrial resources of the county; but its choice situation and scenery, and its growing importance agriculturally, have contributed not a little to the same end. Of the entire population in 1881, 126,743 were males and 136,631 females. These were divided into 54,622 families, occupying 52,703 houses. Some 3319 males and 1371 females were connected with the civil and military service or professions, 1141 men and 7623 women were domestic servants, 9958 men and 294 women were connected with commerce, 3572 men and 934 women were connected with agriculture and fishing, and 49,681 men and 21,734 women were engaged in industrial pursuits, or dealers in manufactured goods; while there were 39,345 boys and 38,900 girls of school age. And to pursue this interesting analysis still further, 7741 men and 15,547 women of those employed in industrial handicrafts were engaged in the manufacture of textile fabrics, and 7986 men and 172 women were connected with the working of mineral substances. Some 3284 men and 920 women were engaged in farming alone, and 813 farmers employed 865 men, 393 women, 118 boys, and 290 girls. The

Parliamentary constituency for the present year (1886) is—
Eastern Division, 8295 ; Western Division, 7750.

Climate.

As Greenock has from time immemorial been noted for excessive rainfalls, it is natural to suppose that the county embracing it should be generally moist as regards climate. As a rule, rainfalls are heavier and more frequent on the banks of the Clyde than in the eastern counties, and the causes of this are not inexplicable. The prevailing winds blow from the south-west, and Renfrewshire, on account of its proximity to the Atlantic Ocean, as well as of its hilly character, gets a lion's share of the rain. The watery clouds on the eastward sweep are broken up by the hills, to which it is believed they have a peculiar attraction, and rains that might otherwise be carried further inland are thus retained in the west. Excessively wet weather is often a hindrance to the agriculture of the county, especially at seedtime and harvest ; but the lower districts, as already hinted, seldom fail to produce good crops of grain, roots, and hay—better than many drier and equally fertile parts of the country. Though wet, however, the climate is not peculiarly cold, and a greater variety of crop is cultivated than in most districts. When autumn or spring sowing is deferred, harvest is sometimes rather late, but in ordinary circumstances, crops in the "laich lands," at least, come to the reaper about the same time as those in the central counties. Further up, it varies from a week to a fortnight later, and sometimes more, but the higher reaches are less dependent on crop-growing than the lower. Of course, the date of harvest is regulated by the character of the summer—whether wet or dry, cold or warm. Like other counties, Renfrewshire has its meteorological vicissitudes. A lengthened spell of dry weather sometimes occurs, and is succeeded by a similar period of all but constant drizzle. Winter is not so stormy as nearer the interior of the country ; still intense frosts are frequently felt ; and they sometimes linger long into spring in the upper districts, retarding field operations.

Through the kindness of Mr Buchan, Edinburgh, we have been allowed to make a few extracts from unpublished records of the Scottish Meteorological Society, regarding the temperature, atmospheric pressure, and rainfall, as registered at different parts of the county. They are exceedingly interesting, and have an important bearing on the subject proper of my treatise.

The first statement shows the mean monthly and annual temperature, and atmospheric pressure, at three different elevations above sea-level.

Temperature.

STATIONS.	Mean of 12 Years.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Year.
Greenock, from 1857-1872.	64	39.0	39.3	40.4	45.4	50.2	56.0	58.4	58.1	54.2	47.8	41.8	39.8	47.5
" " from 1877-1881.	233	38.2	38.5	39.6	44.8	49.8	55.2	57.5	57.0	53.6	47.8	41.3	39.3	46.8
Paisley, from 1858-1880.	88	38.3	39.4	40.6	45.7	49.9	55.7	57.9	57.6	54.2	47.3	40.8	39.1	47.2
<i>Pressure.</i>														
Greenock, from 1857-1872.	64	29.798	29.866	29.831	29.897	29.938	29.921	29.890	29.866	29.838	29.795	29.860	29.822	29.860
" " from 1878-1880.	233	29.795	29.868	29.830	29.892	29.941	29.923	29.892	29.865	29.841	29.800	29.872	29.820	29.861
Paisley, from 1858-1880.	88	29.800	29.860	29.836	29.900	29.940	29.921	29.886	29.864	29.842	29.797	29.865	29.817	29.860

The second table shows the average monthly rainfall in inches at the following Stations from 1866 to 1885 = 20 years:—

STATIONS.	Mean of 12 Years.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.
Greenock,	50	8.08	6.40	4.44	3.33	3.38	3.53	4.09	5.00	5.92	6.65	6.00	7.60
Paisley,	86	5.44	4.10	2.84	2.08	2.00	2.20	3.06	3.09	4.06	4.61	4.04	4.98
Nether Cairn,	700	6.80	4.86	3.94	3.13	3.18	3.76	4.10	5.06	5.88	6.07	5.89	6.40
Middleton,	550	6.87	5.08	3.50	2.80	3.00	3.38	3.75	4.76	5.68	5.72	5.23	6.01
Wanik Glen,	280	5.86	4.89	3.16	2.42	2.45	2.79	3.40	3.91	4.71	4.89	4.58	5.39
Ryat Linn,	310	6.00	4.42	3.29	2.52	2.68	2.92	3.44	4.08	4.82	4.87	4.74	5.60
Springside,	632	6.54	5.06	3.77	2.90	2.80	3.72	3.84	4.90	5.70	5.84	5.44	5.92

The third table shows the mean annual rainfall for different periods, at various points, together with the calculated mean rainfall for twenty-four years—from 1860–83:—

STATIONS.	Elevation of Register.	Number of Years.	Years Specified.	Mean Annual Rainfall.	Mean for 24 Years.
Gourock,	250	4	1865–68	65·58	64·17
Greenock,	50	13	1860–72	65·75	64·25
Overton, . . . . .	..	7	1860–66	71·35	71·45
Kilmalcolm,	296	4	1872–75	61·00	57·28
Kilbarchan,	350	9	1860–68	65·62	63·42
Paisley,	86	24	1860–83	45·37	45·37
Queen's Park,	144	7	1877–83	36·14	36·24
Newton Mearns,	360	17	1862–78	52·33	52·63
Nether Place,	350	11	1860–70	49·24	49·24
Loch Thom,	643	24	1860–83	64·82	64·82
Compensation Reservoir,	600	24	1860–83	66·83	66·83
Shielhill,	962	24	1860–83	65·84	65·84
Spango Burn,	757	24	1860–83	58·94	58·94
Hole Glen,	603	8	1876–83	66·71	67·30
Glenbrae,	574	12	1872–83	66·37	66·23
Mansfield,	573	8	1876–83	68·26	68·86
Darndaff Moor,	840	6	1878–83	64·16	67·86
Greenwater,	788	6	1878–83	64·10	67·80
Garrock,	631	6	1878–83	63·60	67·30
Prospect Hill,	200	5	1879–83	57·69	60·00
Nether Cairn,	700	23	1861–83	58·14	57·64
Middleton,	550	24	1860–83	56·31	56·31
Waulk Glen,	280	24	1860–83	48·34	48·34
Ryat Linn,	310	24	1860–83	48·84	48·84
Black Thornlymuir,	646	14	1860–83	54·69	54·10
Muirhead,	482	14	1870–83	54·23	53·63
Springside,	532	14	1870–83	58·93	58·25
Castle Semple,	240	3	1882–84	52·46	52·10
Kelly Dam, S.W. Border,	640	5	1879–83	66·32	65·36

Geology.

The geological formation is of some interest and importance. It shows a somewhat remarkable development of volcanic rocks belonging to the Lower Carboniferous period, while it embodies an important series of Coal-fields, situated to the north of the volcanic area, between Houston and the eastern border of the county at Rutherglen. The upper division is almost wholly intersected with trap, and this rock also appears in other parts of the county. It belongs to various species, viz., porphyry, greenstone, claystone, wacke, &c., and a coarse conglomerate known as osmondstone. Much of it is of a rotten friable nature. A narrow band of Old Red Sandstone extends round the western end and up the northern border until within a short distance of Port-Glasgow, but this variety of stone has not been found elsewhere. The Coal Measures in the lower division, to which we have referred, underlie an immense depth of earth, chiefly deluvial clay. Mine shafts have in some instances been

sunk through as much as 40 feet of a superincumbent deposit, though at certain points the coal lies nearer the surface. The minerals found are of a varied character, including sandstone, limestone, aluminous schist, ironstone, bituminous shale, and trap.

Soil.

Renfrewshire contains a larger variety of soils than many more extensive counties. All the cropping land is of excellent quality, while its lowland grazings are not to be equalled almost anywhere. The land lying between the Clyde and a line running south from Landbank to Kilbarchan, and thence east to Hurlet and Cathcart, is, practically speaking, flat. The soil is composed of a deep alluvial clay, intersected towards the centre by an extensive tract of peat moss, supposed to have been deposited in brackish water at the same period as the Carse of Stirling and Gowrie and a large part of Haddingtonshire, the estuary of the Clyde having extended at that time from 5 to 6 miles above Glasgow to Newton, where there are three well-defined terraces, seemingly formed by the water having remained stationary for some considerable time. Like the Carse of Stirling, some parts of the "laich lands" are covered with a considerable depth of peat moss, which, as will be subsequently seen, is gradually being brought under cultivation. There are still three detached mosses, however, unreclaimed—Barrochain, Dargavel, and Linwood, whose united area extends to several hundred acres. The undulating portions of Cathcart, Eastwood, and Abbey parishes consist of a strong clay inclining to sharpness, but their southern boundary is depreciated by the prevalence of cold inferior clay.

The "gentle-rising" district, though in some places hard, is mostly good useful land. Near river channels, as in the "laich lands," there is a wealth of rich deep loam, and though chiefly used for pastoral purposes, it is sufficiently good to yield heavy crops had the climate been more suitable. The subsoil comprises a mixture of gravel and stiff clay, the latter predominating in many parts.

The "hilly district," overlying a subsoil of gravel and disintegrated volcanic rock, is largely composed of light land. Here and there it is good, being slightly intermixed with moss; but its composition, together with the climatic influences of the district, adapts it more for pastoral or dairying than arable farming.

Except on the banks of the Clyde, no traces of animal remains have been found. Taking the town of Renfrew as a centre, however, with a radius of 6 or 7 miles, we form a semi-circle embracing land of exceptional richness, by far the

best cropping land in the county. This line includes all the land south of the Clyde, extending from midway between Langbank and Bishopton stations to Bridge-of-Weir, Kilbarchan, and across the Fereneze Hills between Neilston and Barrhead to Bushby. Outside that line the bulk of the land is devoted principally to grazing for a distance of from 3 to 5 miles, while all the higher lying land bordering on Ayrshire is essentially a sheep farming district.

The State of Agriculture prior to 1860.

Since the introduction of improved farm machinery and means of communication, great progress has been made in the agriculture of the county. This will best be shown by a passing reference to the state of the farming matters as they existed early in the century.

The county was at one time parcelled out to a much greater extent than it now is or has been for many years. In the end of last century, for example, there were no fewer than seventy-five properties ranging in value from £100 to £6000. Fifteen exceeded £1000, while a considerable extent of land was shared by proprietors possessing under £100 per annum. About the close of last century, however, several important changes took place in the ownership of land. One of the largest estates was transferred to a new owner, and many small ones were consolidated through the extension of larger properties. Well-nigh half the proprietors acquired their lands by purchase within the last forty years of the eighteenth century, the extent of land involved amounting to nearly one-third of the whole shire. These changes led to an enhancement of the revenue of the county, and between 1795, when there were in all close on four hundred people owning land worth from £10 upwards, and the year 1810, its total valuation rose to £126,000.

Farms, as a rule, were small, and not so well supplied with houses as those of most other Scottish counties. Farm buildings were exceptionally long in assuming the convenient forms of more modern times, and prior to 1830 few steadings were slated. In 1795 rents generally varied from £20 to £150, there being rarely any holdings exceeding 100 acres in extent. Early in the century grazing farms increased rapidly, reaching in several instances 200 acres. In the higher reaches of the county some holdings approached 500 acres by the advent of 1800, and rents advanced by leaps and bounds. The average rental in 1795 was about 10s. per acre, but within ten or fifteen years it had increased to fully 18s. Rents were then as now extremely variable, ranging from 2s. an acre up to £5. Farms were held generally on leases of nineteen years, and in many

instances for longer terms. Shortly after the close of the century, however, many proprietors limited the lease to ten or twelve years with much acceptance to the tenantry.

The tenants were generally bound to keep two-thirds of their farms under grass in order to allow the soil ample rest, but with this exception no hard and fast rules were laid down for the regulation of cropping.

Farm implements were pretty much in keeping with the age of which we write. Some sixty or seventy years ago the old timber Scotch plough began to give place to the iron implement of Berwickshire origin. The first threshing-mills were introduced about 1796, but the flail retained its hold for long after that date. These mills cost about £50 each, and were capable of threshing six quarters of grain per hour.

Dairying was carried on to a considerable extent, and the utensils in use for this purpose were in some respects believed to be peculiar to the county. Some of the churns consisted of vertical boxes, and the end of the churn staff was attached to one end of a lever, by which the churn was worked after the fashion of a hand-pump. This system of butter making, however, was greatly improved upon by the introduction of a large horizontal churn, driven by water or horse power. The horizontal churn, in consequence of its more equable and constant motion, threw off butter of very superior quality to, and greater quantity than, the more antiquated upright churn.

The early habits of farmers in the matter of land tillage were somewhat lax. Late in the eighteenth century it was customary to delay field operations till the season was too far advanced for the successful cultivation of crops. This absurd practice continued until a comparatively recent date, traces of ancient sluggishness having been observable so late as the second decade of the present century. In the rotation of crops no particular system was followed. Farmers had the utmost freedom in this respect, but in the upper district two successive crops of oats were generally followed by barley, hay, and three years' grass. Before being ploughed the lea land was generally manured with dung, or an admixture of earth and lime. In the lower division the system of rotation differed but little from that of the higher district, but the six-course shift was if anything more fashionable. Last century an eight-course shift was no uncommon thing. In 1795 it consisted of (1) oats, (2) fallow, (3) wheat, (4) barley, (5) beans and pease, (6) oats, (7) hay, (8) pasture.

The principal cereal crops grown were oats and barley, but wheat, beans, and pease were also cultivated in small quantities. From $2\frac{1}{2}$ bushels to 6 bushels was the general allowance of seed oats per acre; from $2\frac{1}{2}$ to $3\frac{1}{2}$ bushels for barley; and

wheat was seeded at the rate of about $4\frac{1}{2}$ bushels. Oats yielded from 48 to 60 bushels per acre; barley, 36 to 48; wheat, 48 to 72; and beans and pease, 30 to 48 bushels. Only a small extent of land was put under green crop. Clover was never sown as a crop, and turnip husbandry was all but unknown, so late as 1812. Carrots and cabbages were raised on a small scale, while patches of flax met the eye in various parts of the county, notably in the parishes of Lochwinnoch and Kilbarchan. Potatoes, however, were cultivated with great success. They were introduced about 1700, and seem to have been cultivated on the most approved principles from the beginning. The ground allotted to their growth was repeatedly ploughed and manured in the drill with from 40 to 60 cart-loads of Glasgow manure, which cost from 2s. 6d. to 3s. per load. When potatoes were first introduced, the seedlings were planted further apart than they are now, and generally yielded from 48 to 50 bolls per acre.

The cultivated land of the county was largely interspersed with extensive tracts of waste and moss ground, the greater part of which has been brought under the plough during the past fifty or sixty years. About the beginning of the century some 13,800 acres, or nearly one-eleventh part of the shire, was held in common among the farmers, but the practice was early abolished, to the advantage, it is said, of all concerned. In reclaiming the mosses and other uncultivated lands, a great deal of draining had to be performed. The drains used were either the narrow open casts, or narrow close drains filled with small stones. They varied in depth from 2 to 3 feet, according to the nature of the soil. On the flat carse grounds wide, sloped, open ditches were extensively used to good purpose.

The manurial supplies of the county consisted chiefly of lime and dung, no marl having been found within the county. Compost was seldom made until comparatively lately, and lime, which was chiefly imported from Lanarkshire and Ayrshire, cost 16s. per chalders of 16 bolls. The average amount of lime applied varied from 6 to 8, and in exceptional cases reached 10 chalders per acre; and it was estimated as early as 1812 that at least £12,000 worth of lime was annually used in the county, exclusive of the expense of carriage in bringing it to the fields. Glasgow, Paisley, Greenock, and Port-Glasgow were the principal sources of dung.

One of the first things to raise the value of property was the inclosure of land. Renfrewshire agriculturists were amongst the first to take advantage of fencing, and there was less to do in this direction after the advent of the present century than in almost any other Scotch county. The inclosures in the arable district usually embraced from 5 to 12 acres, but in the higher

districts they considerably exceeded that estimate. The higher districts were cultivated only to a very limited extent. They lay mainly under natural pasture, while the same may be said of fully three-fourths of the middle division. The lower parts were more under the control of the husbandman. Here natural pasture was early broken up, and amongst other crops a considerable extent of hay was grown. A common allowance of seed ran from 4 to 6 lbs. of clover and about $1\frac{1}{2}$ bushels of ryegrass, the average yield ranging from 200 to 250 stones per acre.

The most neglected work on the farm was the "weeding" of land. The importance of cleaning was ill-understood, and couch grass and thistles and other pernicious weeds were allowed to sprout and spread unheeded, greatly to the injury of the crops.

To complete the "contrast," we shall briefly refer to the early resources of the county in live stock. Dairying appears to have been the chief object of the farmer's attention from time immemorial. The cows were speckled or spotted in colour, weighing from 4 to 5 cwt., and their produce was mainly disposed of in Glasgow, Paisley, and Greenock in butter and butter milk. There were few cheese dairies. These were devoted almost solely to the manufacture of Dunlop cheese. The Alderney breed of cows was introduced in 1780, and crossed with the Dutch breed and native cattle. They yielded richer cream, but a smaller quantity of milk than the native breed, and the latter were thus preferred. In some parts of the county the practice of letting cows for the whole season was adopted, the rate about 1812 being from £13 to £14 per cow. Sixteen or seventeen years previously, however, the letting rate was as low as from £6 to £7 each cow. The average yield of milk was estimated at 7 Scotch pints (about 12 imperial quarts) per day, and that of butter at about $4\frac{1}{2}$ lbs. per week, for six months. The old system of management differed considerably from that of the present time. The cows were fed in the house through the winter, and generally allowed a few hours "airing" every forenoon. Farmers seemed careless as to the importance of accumulating as much manure on the farm as possible, but no sooner had they become alive to its value than the ancient practice began to die out. The cows' rations in the winter months consisted chiefly of oat straw with a small allowance of potatoes, boiled with chaff or chopped straw. Hay was usually substituted for the straw as the calving season approached, and the supply of potatoes increased, while a little grain, meal, seeds, and dust were generally added. Cows ranged in price from £15 to £21, heifers from £3 to £10, and calves from £1 to £1. 5s.; while from £10 to £15 was a common price for a bull. The calves were chiefly sold to butchers at about 10s. a-head, but

it would have been for the advantage, it is said, of the farmers had they reared more cows than they did. Few cattle were fattened for the butcher.

Sheep farming was long greatly neglected. Much remained to be done in managing this branch of husbandry after almost all other branches had been tolerably well improved. The sheep were mainly of the blackfaced breed, and inhabited the more elevated parts of the county. A Mr John Smith from Roxburghshire, farmer, Millbank, Erskine, was singled out early in the century as the most enterprising sheep farmer, having fed annually for several years from 300 to 400 Highland sheep on turnip fields. In 1810, some 500 merino sheep were imported from Spain, and did well in Renfrewshire. They soon spread widely over the county. They yielded rather more wool of a much finer class than the original breed of the district, and brought good prices in the lean market—for breeding purposes. Fifty rams realised an average price of £15, and 200 ewes brought about £10 each, sold by auction, the purchasers being mostly men of the neighbouring counties. Had such fine wool-producing sheep been more extensively used and carefully managed, it is believed a powerful impetus would have been given to the industrial trade of the county, and that a large expenditure of money obtained by wool-producers in other parts of the county would have been pocketed by the farmers of the west.

That great attention was devoted to the rearing and management of draught horses may be accepted as a matter of course. No county evinced an earlier or more ambitious predilection for powerful, active sound-going agricultural horses than Renfrewshire. Some eighty years ago, 40 guineas and 50 guineas were common prices for farm horses. A pair ploughed at the rate of a Scotch acre per day, and in carting over good roads a ton was the usual burden imposed. They were fed on oats and oat straw during winter, and on pasture and cut grass through the summer and autumn months. Carters' horses were allowed hay, oats, and beans. The use of oxen, either for ploughing or carting, had been long abandoned before the advent of the present century. Few pigs or poultry were kept.

The cost of labour in those days was very small, compared with that of to-day. Still, during the first ten years of the century, it increased very rapidly. In 1804, men servants, exclusive of their board and house room, received £15 per annum; women servants, £6; day labourers, 1s. 11d.; women, in harvest, per day, 1s. 8d. During the next six years these rates had increased nearly a third, and other items of labour became correspondingly dear. The cost of reaping an acre of corn, for example, was computed at 12s., while the threshing of it cost about 3s. 6d. per

quarter. Ploughing and harrowing per acre cost from £1 to £1, 10s.; mowing hay, 4s. to 5s.; digging the ground, £4 to £6; and a day's work of a horse and cart, with driver, 7s. to 8s. The hours of labour were similar to those of the present time.

Progress of the Past Twenty-five Years.

Notwithstanding the progress made prior to 1860, a great deal of useful work has been done since then. Land that was formerly utterly barren has been converted into a productive state; houses that were all but uninhabitable have been swept away; and fields of ungainly and awkward shapes have been advantageously transformed.

It is estimated that from 400 to 500 acres of moss and swampy land has been reclaimed since 1857; while a large extent of cultivated land has been increased in value by means of draining, liming, and fencing. About 100 acres of sterile moss, in the neighbourhood of Paisley, belonging to Lord Dunglass, were taken by the Cleaning Department of the Glasgow Corporation in 1879, on a lease of thirty-one years, at a nominal rent. Immediately on acquiring the land, the Corporation began draining it. The drains were cut as deeply as the soft nature of the ground would permit—4 spadings in the main, and 3 in the common drains. This partially dried the ground, and after a few months of summer weather, the drains were deepened to the requisite depth—5 feet. The man who took out the last spading laid the tiles as he proceeded, and to prevent them from rising through the pressure of the sides of the drain, the lad who handed him the tiles immediately placed a sod on them and stood on it. The tiles used were of the dwarf-flanged description. When properly laid they are less liable to choke than other kinds of tiles. The flat wooden sole and common horse-shoe tile have been sometimes used in similar reclamations, but the floating fibre catching upon the wood sometimes chokes the drains. The drains were cut 16½ feet apart, and the moss was carefully subsoiled,—the original surface being kept on the top. The sods were broken by means of hoes; a squad of the Glasgow “unemployed” having been engaged for the purpose. The land was heavily top-dressed with road scrapings containing a large percentage of lime, but no additional supply of new lime was allowed. The draining cost about £20, and subsoiling and hoeing about £10 per acre. Such an expensive reclamation is seldom undertaken, but it is wise, if the subject in hand is good, to do the work thoroughly. It often happens—and it seems to have been the experience of the Glasgow Corporation—that the costliest work is the cheapest in the end. The Corporation's land in its original state was utterly worthless, and now it is

valued at from 30s. to 40s. per acre. Within a year after the work was begun, it was placed under potatoes, and also in the following year, the seed having been planted solely by manual labour. These two crops firmed it, so that it would bear horses shod with leather and gutta-percha sandals in the third year, and it is now under regular cropping rotation. In the results of the reclamation, the most hopeful anticipations have been realised, a satisfactory profit having already been obtained from the land.

The new land is of greater value to the Corporation than it would have been to an ordinary tenant, affording as it does an outlet for the scrapings from the macadamised roads of the city, which forms an excellent dressing for mossland.

Similar improvements have also been carried out on other estates in this neighbourhood, though not so recently as those just referred to. Some thirty years ago, Mr Spier of Blackstone reclaimed the moss of that name, converting 130 acres of bleak dormant earth into good active soil. About the same time another waste, called Plantation Moss, extending to about 40 acres, was fertilised and put under crop. Since then, too, the spirit of improvement has been actively at work in other districts. Kilmalcolm Farm, Hillside, for example, has been enlarged by the addition of some 50 acres of new ground, and improved by the draining of swampy and coarse pasture land. In the parish of Neilston Mr Robert Holms reclaimed some 70 acres, and besides these vast improvements have taken place in the condition of cultivated land. In every district of the county a great deal of draining and top-dressing has been done. The introduction of the railway lent a powerful impetus to cultivation. It opened up access to the manurial repositories of Glasgow, Paisley, and Greenock, and these have been widely taken advantage of by farmers. City manure has been extensively used for many years with good results.

Some twenty-five or thirty years ago the wet marshy meadows which met the eye in several districts had to be cut by the scythe and gathered by means of a hand-rake. Since then, however, they have been largely drained, and sown down with timothy and other valuable grasses, and cutting is now performed mainly by sowing machines, which were partially unknown twenty or thirty years ago.

But before going further we shall see what progress really has been made in the direction of extending cultivation. In 1857 there were 75,151 acres under cultivation, including bare fallow and grass; in 1868, 86,531; in 1874, 89,493; in 1881, 94,339; and in 1885, 95,529. There has thus been a steady and substantial increase during the periods indicated. Since 1857 the cultivated area appears to have increased no less than

20,378 acres. It may be explained, however, that the statistics for that year did not include holdings under ten acres in extent. But since 1868 there has been an advance of 8998 acres, which, spread over the seventeen years from 1868 to 1885, show an annual gain of fully 529 acres. During the past four years the cultivated area has developed at the rate of close on 300 acres per annum; but, of course, these figures give no indication as to whether crop-growing has increased or diminished.

The statement on page 18 shows the extent of the several parishes, together with their valuations in different years, and gives the results of the recently improved area of the county.

The table exhibits a remarkable advance in the valuations of most of the parishes. Down to 1879 every parish made distinct progress, with exception of Inchinnan and Abbey. These decreased £3122, 4s. 4d. and £9218, 11s. 2d. respectively. Such diminutions are somewhat extraordinary, but they are not due to strictly agricultural causes. It will be observed that the value of Inchinnan parish made an enormous bound between 1861 and 1870; and that, notwithstanding the striking fall referred to, its valuation in 1879 was considerably above that of 1861. The parish of Abbey, whose loss occurs between 1861 and 1870, recovered itself, and resumed progress before the advent of 1879. Six parishes have decreased in value since 1879, the fall in the case of Greenock being no less than £30,366, 16s. 8d. It will be seen, however, that the Greenock parish made quite an exceptional rise between 1870 and 1879; but after all, the present valuation is less even than either that of 1861 or 1870. The other parishes which have fallen off are Houston, Inchinnan, Beith, Dunlop, and Renfrew. The last-named parish has decreased £7277, 12s. 3d. since 1879; but the fall in other cases mentioned is comparatively trifling. It would be difficult to account with certainty for the decline of recent years, more than for the striking fluctuations prior to 1879; but we suspect the depreciation in the value of land has had something to do with it.

Despite the fluctuations which we have shown, however, the total valuation of the county has nearly doubled since 1861. Net increase, £369,940, 17s. 7d.; since 1870 it has advanced £304,032, 9s. 9d.; and since 1879 it has increased £31,214, 10s. 1d.

In live stock, too, distinct progress has been made. The stock have responded satisfactorily to increased attention, and more liberal treatment on the part of owners; and to-day the county takes a more prominent stand in the "battle of the breeds" than ever it did before. Little or no alteration has occurred as regards the breeds of stock kept; but it is worthy of note that Border Leicester sheep have obtained a footing on several farms.

Statement showing the Extent of the several Parishes, with their Valuations in different Years.

Parishes.	Acreage.	From 15th May 1860 to 15th May 1861.	From 15th May 1869 to 15th May 1870.	From 15th May 1878 to 15th May 1879.	From 15th May 1885 to 15th May 1886.
Inverkip,	13237.647	£23,902 9 6	£30,203 1 0	£40,270 19 0	£44,466 0 0
Greenock, exclusive of burgh,	6247.981	7,722 14 8	10,780 5 0	37,673 4 0	7,306 7 4
Port-Glasgow, exclusive of burgh,	1031.772	14,597 0 6	14,280 10 4	24,580 10 0	30,987 14 0
Kilmacolm,	20405.869	18,029 8 4	18,191 3 0	14,935 13 0	14,777 2 8
Houston,	7644.067	11,453 17 5	18,565 17 6	16,762 6 0	16,251 5 10
Erskine,	9092.378	6,141 14 6	10,784 10 4	7,662 6 0	6,820 4 0
Inchinnan,	3527.998	26,803 1 8	27,423 8 0	37,397 11 8	38,985 14 4
Kilbarchan,	9098.411	21,727 3 0	22,607 0 0	26,423 1 0	26,443 9 6
Lochwinnoch,	10877.894	622 0 0	649 5 0	661 10 0	647 8 6
Beith (part of),	543.886	810 13 11	867 0 0	1,075 6 0	1,063 6 0
Dunlop (part of),	1100.880	34,226 12 10	35,563 10 7	43,963 16 10	48,714 7 6
Neilsen,	12982.202	60,653 12 2	61,435 1 0	70,587 1 6	77,574 0 11
Abbey of Paisley, exclusive of burgh,	17080.562	15,645 9 5	20,413 4 5	24,721 9 0	17,443 16 9
Renfrew, exclusive of burgh,	4488.488	32,489 0 5	39,929 9 6	55,059 17 7	62,429 2 8
Eastwood,	5690.122	16,743 13 4	37,981 15 7	126,315 10 8	157,743 0 6
Govan (part of),	1209.686	16,100 4 0	33,369 0 2	81,103 18 9	84,779 0 4
Cathcart (part of),	2696.961	18,382 19 4	19,869 15 6	23,755 6 6	23,942 18 2
Mearns,	10606.960	12,524 13 11	18,582 13 6	14,434 6 6	15,127 17 6
Eaglesham,	16005.040	54,025 17 1	62,447 0 0	75,084 0 0	77,703 0 0
Railways and other public undertakings, . . . . .	..			
Total,	162427.953	£394,963 6 6	£449,771 14 5	£722,589 14 0	£763,804 4 1

Details of Improvements and Systems of Management.

It was recently my privilege to visit a number of leading farms and estates in the county, and to make personal inquiry as to the improvements carried out, as well as to the prevailing systems of farming, and this, together with elaborate correspondence with landlords, factors, and farmers, enables me to give under this head one of the most interesting sections of my report. I have before me, moreover, the information obtained by Mr James Hope for the Royal Commission in 1880, and will thus briefly refer to the methods of management adopted on the principal estates and many of the leading farms in the three divisions of the county.

The Hilly District.

This district forms by far the largest division. It includes the entire parishes of Inverkip, Greenock, Port-Glasgow, Kilmalcolm, Eaglesham, Mearns, and the greater part of Neilston and Lochwinnoch, as well as portions of several mainly low-land parishes. The medium elevation is from 500 to 600 feet, but being largely composed of disintegrated trap rock, the soil where sufficiently deep is fertile—generally light active land. It is worthy of remark, however, that Inverkip, though farmed similarly to the neighbouring parishes, contains an entirely different class of soil from that of the East Garvock Hills. Much of the lower lands lie on Old Red Sandstone, and a good piece of grazing land is scarcely to be found. The soil, although apparently fairly good and firm, conceals a large amount of water which is very difficult to remove by under-drainage. As a result of this, crops are much later than one would anticipate from its low situation and proximity to the sea. The rainfall is heavier here perhaps than in any other part of Scotland—certainly the wettest part of Renfrewshire. It ranges annually from 45 to 65 inches, and is very evenly distributed over the year. The district is almost entirely devoted to dairying and sheep farming, the former constituting the staple occupation.

The greater part of the hilly district is owned by Sir Michael Robert Shaw Stewart, Bart. His possessions, the largest in the county, extend to some 25,000 acres, of which 11,000 are arable, 12,910 pasture, and 1090 woods and forests. They have been considerably improved during the past twenty or thirty years by draining, building, and reclaiming; and, as a rule, the tenants pay interest on the money expended by the landlord in drainage. The estate comprises in all 99 farms, which may be classed thus—2 above 1000 acres in extent, 3 from 500 to 1000 acres, 27 from 200 to 500 acres, 29 from 100 to 200 acres, 17 from 50 to 100 acres, 14 from 20 to 50 acres, and 7

under 20 acres. These are usually held on lease, with 40 days' notice to quit, but judicious liberty is given to tenants in the management of their farms so long as they conform to the rules of good husbandry. The rents of arable land vary from 20s. to 35s. per acre, and are all fixed and paid in money. Up till 1880 they increased from 15 to 20 per cent; but it was generally considered that the additional accommodation required by the tenant exhausted any advantage to the landlord which the rise gave. Since then, some liberal concessions have been made (including 10 per cent. reduction on the farm rents of the half year), and the tenants have all along obtained assistance in lime and manure when such were needed. No noteworthy change has occurred in the system of farming over these estates since 1860, but it is freely admitted that the agriculture of the district has vastly improved since then. The six-shift rotation is the one usually adopted, but tenants are encouraged to let their land lie as long under pasture as possible. The crops grown consist of oats, a little barley, potatoes, turnips, and hay; while milk, potatoes, oats, and hay are the descriptions of produce generally sold. Farm stocks comprise Ayrshire cattle, blackfaced sheep, Clydesdale horses and pigs of various sorts. Cattle and sheep are pretty extensively bred on the estates, but comparatively few are fattened.

The parish of Kilmalcolm is an extensive district in which mixed husbandry is carried on. It contains some very good farms, and one of these is the farm of Dennistown, tenanted by Mr John Thomson. Comprising fully 130 acres, it is rented at 35s. 6d. per acre. This, however, is far above the average rental of the parish. The soil is light and friable, overlying a sandy "till" or gravel. This class of soil predominates over the district, but it is here and there intersected with swampy flats and peat moss in the valleys. Along the sides of the River Gryffe, which drains the entire length of the parish, fine loamy soil prevails of considerable depth. These level parts have almost all been drained by the proprietor within the past few years. On Dennistown farm the eight-course shift is followed, viz., oats after lea, potatoes or turnips, oats, ryegrass-hay, and pasture for four years. Oats yield 30 bushels per acre, weighing from 38 to 40 lbs. per bushel; potatoes from 6 to 8 tons, turnips about 15 tons, and hay 1½ tons. The stubble land is ploughed in October and November, and allowed to lie thus exposed all the winter. It is harrowed well, and ploughed again between the middle of March and the first of May, as opportunity occurs. Mr Thomson prefers second ploughing to grubbing for two reasons—(1) because the rock is so near the surface that the grubber tines are extremely liable to be broken or bent, and (2) because the land is in a better state for sowing after being ploughed. Being for green

crop, it is manured with from 20 to 25 cubic yards of farm-yard dung, or about 30 tons of police manure, supplemented with from 2 to 3 cwt. of bone phosphates or special manure, according to the quality of the dung applied. For Champion potatoes, the dung is usually ploughed down, at the rate of from 30 to 40 cubic yards, during winter, and $1\frac{1}{2}$ cwt. of phosphate guano, 2 cwt. bone phosphate, $\frac{1}{2}$ cwt. sulphate of potash are added just before planting in spring. The more economical way, however, of manuring in the drills, is adopted for other varieties of the favourite esculent, less artificial manure being required than when the dung is ploughed down in winter. When the dung is applied in winter, it is liable to be brought to the surface again, and partly wasted by second ploughing in spring, but to prevent this, Mr Thomson drills the stubbles (what is sometimes termed "ribbing"), which covers the dung without burying it. In spring it is harrowed with a common harrow across the drills, and then ploughed down. This is a very exceptional system of preparing land for potatoes, but it is one which thoroughly answers the purpose.

Since 1860 the proprietor has erected a handsome steading on this farm, free of interest, the tenant doing all the cartage. All the interior fences have been rooted out, and the fields rearranged and fenced anew. A good deal of land has been drained at the mutual expense of the landlord and tenant. As regards live stock, the farm is well plenished. The dairy stock are let to a bower or dairyman at £15, 10s. per cow per year. The owner supplies the bower with turnips, bean meal, bran, hay and straw for the cows. The calves, except those that are required to keep up the stock of cows, are sent to the butcher as soon as they are dropped. The produce of the dairy is sent to the market every morning in the shape of sweet milk, cream, and skim milk; and what is not disposed of is churned, and the butter milk is sold. This system is widely adopted in the county. A few Leicester sheep are kept on the farm, being summered in the grass parks, and wintered on pease and oats, and hay when necessary. Excepting a few reserved for breeding purposes, the lambs are sent to the butcher in June and July, and the aged ewes are similarly disposed of in November.

Along the south-western border of the county are the estates of Carrath and Garthland, the property of Mr Macdowall. Carrath covers some 1600 acres of Kilmalcolm; while Garthland, comprising about 1000 acres, lies within the parish of Lochwinnoch. The former consists of 800 acres of arable land, 90 acres pasture, 650 acres hill and moor, and 60 acres of woods and forests. The smaller estate is made up of 300 acres of arable land, 250 acres of meadow, 275 acres of permanent pasture, 100 acres of moorland, and 70 acres of woods. Dairying and sheep

farming are the distinctive features of the agriculture on this property. The latter is not largely pursued, there being only one farm on the Garthland estate and three on Carrath. The soil of the latter estate is of a sharp light character; but there is a variety of land on the Lochwinnoch estate—rich loam, heavy clay, sharp gravel, and moorland. Some important changes have occurred since 1860, the landlord having expended money liberally in increasing the comfort of his tenantry. He has rebuilt many old fences, without interest, but on drainage improvements he advanced money at $6\frac{1}{2}$ per cent. A good deal has recently been done in the way of improving the farm buildings. On Carrath there are eight farms, two of which range in size from 200 to 500 acres; while three extend from 100 to 200 acres, and three from 50 to 100 acres. Garthland comprises only three farms, two of which range from 100 to 1200 acres in extent, and one is less than 100 acres. These holdings are tenanted on a lease of nineteen years, without stipulation as to notice to quit, and the tenants usually implement the full conditions of their leases. Rents on Carrath average about 17s. 6d. per acre for arable land, £1, 15s. for pasture land, and 3s. 6d. for hill and moorland. They are dearer on the Lochwinnoch estate. Arable land averages about £1, 15s.; pasture, £2, 5s.; hill and moorland, 7s. 6d.; and meadow, £1. All the rents are fixed. The conditions of entry are similar to those prevalent on many other Scotch estates. The incoming tenant takes over the farm-yard manure at valuation on entering the farm, and has to accept valuation of the same on leaving. The way-going tenant has to leave the farm in a certain rotation. There has not been much alteration made recently on the systems of farming on the estates; but on the heavy soil at Garthland there is less green cropping now than formerly, owing to the exceptionally wet seasons of late years, the manure being to a large extent ploughed down with lea. The crops grown are oats, potatoes, turnips, and hay, the course of rotation pursued being the seven-years' shift. Dairy produce, potatoes, and hay are the principal commodities sold off the farms. The stock kept are the same as those on the estate of Sir M. R. Shaw Stewart. Cattle are bred for keeping up the dairy stocks, but very few for sale. A considerable number of both cattle and sheep, however, are fattened on the pastures.

The farm of Netherhouses, in the parish of Lochwinnoch, in conjunction with the adjacent farms of High and Low Barford, and other grass lands on the estates of Garthland, Lochside, Castle Semple, Auchengrange, &c., were occupied till Whitsunday 1886 by Mr William Bartlemore. Their united area is about 250 acres, all arable, mostly under pasture. Latterly a good portion of Barfords has been devoted to the growth of

timothy hay, which has become a favourite and remunerative crop in the county. The farm of Bourtrees adjoins that of Netherhouses, and these two holdings have been owned and occupied by the Bartlemore family for upwards of a century. It is noteworthy that this family are a branch of the Patons of Swinlees, in the adjoining parish of Dalry, Ayrshire, whose name is inseparably associated with the breeding of Ayrshire cattle. The Patons rank amongst the most successful breeders of the renowned dairy breed, and the Bartlemores seem to have inherited not only their fancy, but also much of their enthusiasm. During the past eight years Mr William Bartlemore has been one of the most prominent breeders of Ayrshires in the county. In 1884 and 1885 his animals won over £500, exclusive of plate and medals, and that in the hottest fields of competition at the Scotch and English National Exhibitions, at the London Dairy Show, and at the leading shows in the west of Scotland.

The soil on these farms is chiefly of a clayey nature, intersected to some extent with patches of heavy loam, admirably adapted for grazing purposes. The average rental, including the adjoining grass lands, is 38s. per acre. A dairy stock is kept at Netherhouses. The produce until recently was sold as cheese, but Mr Bartlemore found it more convenient and profitable to send the milk daily to Glasgow. A small portion of the farm was tilled for corn and root crop; but the major part was grazed by sheep, store cattle, and back-calving Ayrshire cows. For about thirty years prior to his death in 1883, the late Mr Robert Bartlemore, a former tenant of these farms, was an extensive grazier. His total rental in 1880 was about £560. He kept ten or a dozen cows, whose produce was made into cheese, but his principal pursuit was grazing. He grazed about 250 head of cattle every year, and occasionally a few scores of blackfaced ewes, with cross-bred lambs. One-fifth of the cattle were home-bred Ayrshires, due to calve in the months of October and November; while the remainder were mostly bought in lean in spring. These were largely purchased at Muir-of-Ord and other northern markets. He found north country cattle to do well with the change of climate and keep, and they seldom left a smaller profit than from £4 to £6 a head, sometimes more. In 1879 the margin was considerably diminished by the increased value of lean stock, but even that year was not unprofitable. Any cattle bought after spring were generally brought from the islands of Skye and Islay. The ewes were purchased in the month of October, and mated with a whitefaced tup, and both they and their lambs were sold off fat as early as possible next year.

Great improvements have been effected on these farms

during the past thirty years. They have all been thoroughly drained with common tiles and soles, and the open ditches and water runs which formerly intersected the farms have been tiled and covered. The landlord paid for the tiles and their carriage, and the tenant cut and filled the drains at his own expense. The quality of the land has thus been greatly improved, while much good work has been done since 1860 in fencing.

On the farm of South Halls, also in the parish of Lochwinnoch, dairying is more exclusively practised than on Netherhouses. The dairy herd includes some twenty animals, and it is mainly maintained by home-breeding. In his report to the Royal Commission in 1880, the tenant, Mr John Harvey, stated that he obtained 500 gallons of milk from each cow per annum, which was equivalent to £14 per head. His average outlay in food not grown on the farm approached £5 per cow, the material used consisting of, as a rule, bean and Indian meal. For the work of twenty cows he employed two female servants, whose united wages, besides board, was about £35. When he entered the farm some twenty-two years ago, the same class of servants cost only £4, 10s. each, which represents an advance, notwithstanding the downward tendency of recent years, of about 50 per cent. since 1863. The dairy produce is sent to Glasgow as sweet milk, and in the summer of 1880 he got 7d. per gallon for it, which was the highest price going. Out of that return he paid one penny for railway carriage, with the result that 250 gallons during summer brought him a clear return of £6, 6s., and a like quantity in winter realised £8, 6s. 8d., which made the total return per cow up to £14, 12s. 8d. The gross annual sum received for milk amounts to about £290, while he usually disposes of eight cast cows each year for about £144, and this sum, together with about £150 for timothy hay, represents the entire revenue of the farm. He ploughs as little land as possible, because the cost of labour and manure would, in addition to rent, leave him no profit.

Pursuing our north-western course, we next enter the parish of Neilston, in which both agricultural and pastoral farming are pretty largely carried on. One of the principal farmers in this district is Mr John Holm, Japston, who holds no fewer than three farms, with a united area of 450 acres. Of these 250 acres are arable, and 200 acres pasture, each holding varying in rent according to the quality of the land. On one holding the tenant pays 60s. per acre, another 33s., and another 20s. for arable land, and the pasture ranges from 10s. to 15s. The soil is of a mixed clayey character, and the climate is late and moist. Mr Holm ploughs very little, having adopted the system of irrigating meadows with satisfactory results. The principal

fodder crop grown is timothy hay, which, together with other varieties of hay, usually occupies about 60 acres each year. Only some 25 acres are devoted to the growth of oats. Generally speaking, however, there is abundance of straw produced on the farm, but the grain is usually light. For the turnip and potato crops the land is ploughed in the autumn, and grubbed in spring, and is dunged chiefly with farm-yard manure. Turnip land gets a little nitrate of soda in addition to the dung to start the young plant, which is often stiff in coming away. A good many improvements have been executed on this farm since 1860. Over £2000 have been expended by the landlord and tenant together in building, draining, fencing, &c. The landlord erected an excellent steading, free of cost, and drained extensively, charging the tenant 5 per cent. interest on the latter. The farm of Japston, like that of Netherhouses, has long been creditably connected with the breeding of Ayrshire cattle, for which the tenant has won many distinguished prizes at local and other shows. The dairy cows on this farm, and also in the surrounding district, are liberally fed with bean meal and bran. A little draff is used where sweet milk is the main product; but in this immediate neighbourhood the milk is nearly all churned, and disposed off in the shape of butter and butter milk.

The system of farming in this district has not changed materially since 1860, but less land is ploughed, and more timothy hay grown than formerly.

In the same parish is the farm of Caplaw, tenanted by Mr Matthew Templeton. It embraces 300 acres, is wholly arable, and is rented at about 20s. per acre. Since 1860 the rent has increased about £40. Lying at an elevation of from 600 to 750 feet above sea-level, it comprises mossy light soil, and is worked under a six-course shift, viz., oats, potatoes and turnips, oats, hay, and two years' grass. In good seasons crops yield well, but, as a rule, the grain is light in weight and dark in colour. Land for green crop is fallowed in autumn. In spring it is ploughed, harrowed, and grubbed, and again harrowed until a good tilth is secured. The manure, mostly dung, is applied in the drill for both turnips and potatoes. Since Mr Templeton entered the farm some six years ago a considerable portion of it has been drained and fenced, while by a better system of agriculture generally he has enhanced its value. The landlord, moreover, repaired houses, and built some new ones, the tenant performing the cartages. Ayrshire cattle are kept, and until the last two years above twelve calves were reared annually. The only stock fattened are cows that become unfit for the dairy, and these when fat weigh from $3\frac{1}{2}$ to 5 cwt. each. Besides the cattle reared on the farm, a good many cows

are from time to time bought in to keep up the dairy herd. In summer the cows are fed on grass, and in winter they receive a liberal allowance of boiled food, oat straw, hay, turnips, and bean and linseed meal, and bran. They are fed three times a day, excepting newly calved cows, which get a few turnips about mid-forenoon and again in mid-afternoon. This system of feeding allows the animals ample resting time, which is an important point in stock management. The dairy produce is sold in Paisley in the form of butter and butter milk. No sheep are kept, but the pasture is occasionally let for wintering hogs, for which the usual remuneration is £6 per score. The farm work is performed by four horses, three of which are Clydesdales.

In replying to the Royal Commission inquiries in 1880, Mr Robert Gillespie, farmer, Boylestone, stated that he owned a herd of forty dairy cows, valued at £20 per head. About twelve cattle were reared annually on the farm, while some twenty were bought in. The yield of milk per cow was about 8 imperial quarts per diem, and it was sold as milk. He neither made cheese nor butter. Keep for each cow cost about £14 per annum, the half of which was grown on the farm. The annual sale of milk, which was delivered to the purchasers on the farm, yielded about £700, and the sale of cast cows £200; but, with exception of about 100 bolls of corn, these constituted the entire marketable produce of the farm.

An important change in the system of farming in this district since 1860 is the production of winter milk, which many people believe does not pay the farmer. Another change is the reduced area of land devoted to the growth of potatoes, for which there has been inadequate demand of recent years. Though ameliorations have been effected more or less on every farm, there is still a great deal of land in need of improvement. Additional draining would be of great service, while much of it might be limed and fenced with advantage to all concerned. Irrigation, where practicable, suits the district well, and would be more extensively adopted if sufficient water supply could be obtained.

The estate of Eaglesham, with an area of some 16,000 acres, belonging to Mr Allan Gilmour, comprehends almost the entire parish of that name. Excepting 160 acres of wood, it is equally divided between arable, permanent pasture, and hill land. Three branches of farming are thus practised within it,—corn-growing, dairying, and sheep farming. It contains forty-four farms, several of which are very extensive. Four holdings are over 1000 acres in extent; two range from 500 to 1000 acres, nine from 200 to 500, twenty-three from 100 to 200, five from 50 to 100, and one is less than 20 acres. Some improvements have been carried out on all the farms within the past twenty or

thirty years, draining, which was the principal work, being executed at the landlord's expense, the tenant paying 5 per cent. on the outlay. They are held on leases of nineteen years, though not subject to any strict regulations as to cropping. No particular rotation is thus followed. The crops consist of oats, green crop, oats, and hay, followed with from four to eight years' grass. The average rental of hill pasture runs from 3s. to 8s. per acre, arable land being held at from 20s. to 50s. During the thirty-five years preceding 1880, rents increased 30 per cent., but since then both permanent and temporary reductions have been granted. There has not been much done in the way of enclosing land of recent years; still the land is tolerably well fenced. Several thousand acres of moorland are enclosed. The tendency of the past ten or fifteen years has been to increase the extent of permanent grass, and save labour and risk of crop-growing. Almost the only produce sold is dairy produce, sheep, and lambs. Crops yield irregularly, the return of oats varying from 35 to 45 bushels, turnips from 12 to 20 tons, potatoes from 3 to 6 tons, meadow hay from $2\frac{1}{2}$ to 3 tons, and mixed seeds 2 tons per acre. The live stock consists of Ayrshire cattle, blackfaced and Cheviot sheep, Clydesdale horses, and a few Berkshire pigs. Few sheep or cattle are fattened.

On the Eaglesham estate, Mr James Mather occupies 150 acres, which is the extent of the farm of Waukers. With exception of 10 acres of meadow, the holding is entirely arable, and is rented at £2, 13s. per acre. Only some 10 acres are broken at a time, and it is cropped thus:—oats, green crop, oats, hay, and six years' grass. The land yields fair crops as a rule, oats weighing from 37 to 40 lbs. per bushel. Land for turnips and potatoes is prepared in the usual way, and is manured entirely with home-made manure. The farm has been skilfully managed, and by the combined enterprise of the landlord and tenant, substantially improved during the past twenty-five years. The landlord drained the greater part of it, the tenant paying 5 per cent. interest on the outlay. The farm-houses were repaired solely at the landlord's expense. Ayrshire cows to the number of forty are exclusively kept for dairy purposes. They are principally fed with boiled and raw turnips and potatoes, along with draff and bean meal and other artificial stuffs. The dairy produce is wholly sold in Glasgow as sweet milk.

Middle District.

The middle or "gentle rising" district is less than one-half the extent of the division we have just described. It embraces the parishes of Cathcart and Eastwood, with parts of the parishes

of Abbey, Kilbarchan, Houston, Erskine, Inchinman, and Renfrew; and as regards diversity of surface, is one of the most beautiful districts in Scotland. It has been thus described:—"Little gentle hills gently swelling in endless variety, interspersed with various coloured copses, often watered at the bottom by winding rivulets, in different and changing forms, meet every turning of the eye; and few inland views perhaps surpass in richness and variety those which present themselves from the top of every one of those gentle eminences which are so beautifully scattered around the town of Paisley."

The two small parishes of Eastwood and Cathcart form the extreme eastern corner of the county, and resemble each other closely as regards farming. The farm of Shaw Moss, containing 260 acres, and tenanted by Mr Alexander Aitkenhead, in a manner combines the two. It extends into both parishes, and is one of the most important farms in the district. It comprises sandy loam soil and a sprinkling of moss, and was rented at £620 in 1880. Formerly it was held on a lease of ten years, but for some time past the lease has been abandoned. The farm is essentially a crop-growing one, and though the four-course shift—oats, turnips, oats, and hay—is the system adopted, the tenant is not restricted to any particular rotation. Stock breeding is not practised; horses, cattle, and pigs being bought in and sold as required. Some £50 is annually spent in artificial feeding stuffs, while artificial manures are used to the value of £100. The thrashing of grain is done by steam power. In the early part of his tenancy Mr Aitkenhead made extensive improvements in draining and solidifying moss land. He also made several new roads, and erected a considerable stretch of fencing. The gross annual cost of labour on the farm has risen about 10 per cent. since 1870.

The estate of Hawkhead*—though mainly in the parish of Abbey—also extends into the parishes of Neilston, Eastwood, and Renfrew. It comprises some 4400 acres, of which 3650 are arable, 550 pasture, and 200 under wood. The soil is partly stiff loam and light sharp land, the former resting on a subsoil of clay, and the latter on freestone. The property is divided into some twenty-six farms. Ten range from 50 to 100 acres in extent, ten from 100 to 200, five from 200 to 500, and one from 500 to 1000 acres. Improvements have been extensively carried out during the past twenty-five years. The landlord expended the money required in the work, charging the tenants interest on fencing and draining. The farms are held on leases of nineteen years, but no regulations as to cropping are strictly enforced. Rents vary considerably. Arable land is let at about 40s., and pasture at about 15s. per acre, the average rental being about

* This estate has been sold, mostly in allotments, since the above was written.

37s. 6d. These are all payable in money. During ten or twelve years preceding 1880 they increased about 10 per cent. The way-going tenant gets payment for grass seeds sown with the last corn crops, and also for all farm-yard manure made on the farm during the last year of his lease. Within the past twenty years the agriculture of this estate and district has advanced very greatly. This is observable in every phase of farming. The land of the county generally has improved as regards cleanliness, while creditable progress has been made in the live stock of the district. Most of the tenants on this estate work their land under the five-course rotation, viz., oats, green crop, wheat, clover hay, and pasture, but less land is cropped than was the case a few years ago. They are allowed to sell the produce of their farm unrestrictedly, and, as a rule, good crops are raised. The average yield of wheat in good years is about 5 quarters per acre, while $4\frac{1}{2}$ quarters is a common return of oats per acre. Turnips yield about 15 tons per acre, and potatoes, which are more irregular than other crops, vary in yield from 4 to 10 tons. Of clover hay 2 tons per acre is about an average return.

One of the leading tenants on the estate is Mr William Bowie, Blackbyre, who farms 257 acres of arable land in the parish of Abbey. It is worked under a four-course rotation, the crops grown being oats, potatoes and turnips, wheat, clover hay and pasture. The rental is £565. Ayrshire cattle are kept purely for dairy purposes. During summer they are fed in the house, principally on grass, supplemented with feeding stuffs. In winter they get turnips, hay, bean meal, brewers' grains, and bran. About £200 per annum is spent in artificial feeding stuffs, while artificial manures are used to the value of £100. As this is one of the best farms in the district, we have ascertained approximately the cost per acre of the production of each crop grown on the farm. It is as follows:—the rental in each case being 47s., and the rates and taxes 1s. 3d. per acre—*Oats*—seed, 20s.; manures, 40s.; cultivation and harvesting, 40s.; labour (including threshing and marketing), 10s.; and sundries (including tradesmen's bills), 5s. *Potatoes*—seed, 60s.; manures, £10; cultivation, £7; labour, &c., 40s.; sundries, 15s. *Turnips*—seed, 5s.; manures, £8; cultivation, &c., £5; labour, &c., 20s.; sundries, 12s. *Wheat*—seed, 25s.; cultivation, &c., 40s.; labour, &c., 10s.; sundries, 5s. *Clover Hay*—seed, 20s.; manures, 10s.; cultivation, 10s.; labour, &c., 10s.; sundries, 5s. The average crops vary in quantity and value according to circumstances. During the four years ending 1877 oats yielded on average 7 quarters of grain, 240 imperial stones of straw per acre, the value of the former being £8, 8s., and the latter £6. In the same time wheat yielded 5 quarters of grain, and 240 stones of straw, which sold at £11 and £7 respectively. In the

year 1878 the return of oats reached $7\frac{1}{2}$ quarters, for which the tenant realised £9. The yield of fodder was the same as before, but the price had fallen to £4, 10s. Wheat was exactly the same as before in yield, but £10 only was obtained for the grain; and the relatively smaller price of £4, 10s. for the straw. The yield of oats in 1879 fell to $5\frac{1}{2}$ quarters, which brought £6, 17s. 6d., straw being the same in weight and value as in 1878. Wheat too suffered a reduction of fully a third both in yield and value, except in straw, which maintained its previous years' weight and value. Since then, better crops than those of the disastrous year of 1879 have generally been raised, but the financial return per acre has greatly diminished during the past two or three years. Hay yields about 2 tons per acre, turnips about 10 tons, and potatoes 4 tons. The prices of these commodities are variable; but Mr Bowie gives the following as the average prices per ton of a few years past:—hay, £3, 15s.; turnips, £1, 15s.; and potatoes, £7. The productiveness of the farm has been improved since 1860 by draining, while the farm buildings have been extended and repaired. The outlay in draining was defrayed by the landlord, the tenant paying interest at the rate of $6\frac{1}{4}$ per cent., while building operations and improvements were mutually performed. The servants employed by Mr Bowie are engaged partly by the year, by the week, and by the day, and the cost of labour approaches £3 per acre—considerably less than it was some ten years ago.

Mr William Park, formerly tenant of Gallowhill, which is also in the Abbey parish, gave the Royal Commission some useful information regarding the farm of that name. It extends to 100 acres, consists of medium soil, and was held by Mr Park on a fifteen years' lease, which terminated in 1883. It was worked on the four-shift rotation, and rented at £340, while the rates and taxes amounted to about £20. The conditions of lease were closely enforced, which restricted the tenant to a certain course of cropping. This he considered a hindrance to profitable farming. He used artificial manure on the farm to the value of about £100 yearly, while he expended a similar sum in feeding stuffs. The cost per acre of the production of crops was approximately thus:—*Potatoes*—seed, £4; manures, £14; cultivation and harvesting, £6; labour and marketing, £2; and sundries, 5s. *Turnips*—seed, 5s.; manures, £10; cultivation, &c., £4; labour, &c., £4; and sundries, 4s. 6d. *Wheat*—seed, 30s.; cultivation, &c., 50s.; labour, &c., 17s.; and sundries, 5s. *Oats*—seed, 20s.; manures, 35s.; cultivation, &c., 45s.; labour, &c., 17s.; and sundries, 5s. *Hay*—seed, 20s.; manures, 35s.; cultivation, &c., 17s. 6d.; labour, &c., 16s.; and sundries, 5s. The average yield per acre, and value of same, during a period of twelve years ending 1880, he roughly esti-

mated as follows:—*Wheat*—6 quarters of grain, and 2 tons of straw, the former realising 45s. per quarter, and the latter about 55s. per ton. *Oats*—9 quarters of grain, for which he obtained 24s., and straw $1\frac{1}{2}$ tons, for which he realised 45s. *Hay*—2 $\frac{1}{2}$ tons sold at 85s. per ton. *Turnips*—25 tons sold at 20s. *Potatoes*—6 tons realised £5 per ton.

Pursuing our central route, we next enter the parish of Kilbarchan. To represent the landed interests here we select the estates of Blackstone and Milliken, both belonging to the same owner. They extend to about 1500 acres, and are nearly all arable. Only about one-sixth lies under permanent pasture, and the still smaller portion of about one-fiftieth part is devoted to the growth of trees. The soil is principally light and kindly, with a few farms inclining to heavy clay, and a small proportion of cultivated moss land. The reclamation of the latter has taken place within a comparatively recent time. The landlord performed the work, and in some instances charged the tenant interest thereon, but not always. Farms are held by lease. The conditions thereof are restrictive as to cropping and manuring. They are not usually enforced, however, in the case of good tenants who manage their land carefully. The estates are divided into twenty-two farms. Three farms range in size from 200 to 500 acres, ten from 100 to 200, eight from 50 to 100, and one from 20 to 50 acres. The rental per acre ranges from £3, 10s. in the case of the deep loam, to £2 in that of the light kindly soil, and it is wholly paid in money. It has increased considerably since 1860, and farms let recently easily enough at former rents. The letting value of land is estimated first by the quality of the soil, and secondly by its facilities as to markets and convenience for supplies of manure. On these estates, as well as throughout the parish generally, agriculture has advanced considerably since 1860, and the land is generally clean and well managed by industrious tenants. It is not a great stock breeding district, only a few Ayrshire cows being bred for dairypurposes. Various systems of rotation are adopted, but the five-course shift prevails, viz., oats, green crops, wheat, hay, and pasture. Potatoes were at one time more extensively grown than they are now. The average yield of wheat is about 4 quarters per acre; oats, 5 quarters; and beans, 4; turnips, about 16 tons; potatoes 6 tons; meadow hay, 3 tons; and ryegrass and clover, $1\frac{1}{2}$ tons. Very little barley and beans are grown.

Middleton farm is one of the principal holdings in the district. It comprises 237 acres, partly moss, and partly loamy clay land, and is wholly arable. It is tenanted by Mr John Lyle, under a lease, and is worked under the four-course rotation. In 1880 it was rented at £628, and the tenant taxed thus—£9 for poor and school rates, £5 for statute labour money, and £1, 17s. for

occupancy. The crops grown are wheat, oats, beans, turnips, potatoes, and hay. In addition to the dung made on the farm, some 10 tons of artificial manures are annually used, but very little feeding stuff is consumed beyond what the farm produces. Wheat seed for an acre of land costs about 35s. annually; oats, 20s.; turnips, 12s.; potatoes, £4; and hay, £1; while the root crops and hay each get about £12 worth of manure. The cost per acre of labour varies considerably—for wheat, 25s.; oats, 25s.; for turnips, £2; for potatoes, £3; and for hay, £2. Wheat yields about 5 quarters per acre; oats, 4 quarters; turnips, 25 tons; potatoes, 8 tons; and hay, 3 tons. A considerable extent of draining was done during the last lease, which has just expired, the landlord supplying the tiles. The gross annual cost of labour on Middleton farm runs to about £2 per acre, the wages being entirely paid in money.

Regarding the farm of Forehouse, in this parish, the former tenant, Mr Robert Wilson (now in Manswrae), furnished the Royal Commission with some useful information in 1880. He stated that he kept on it a dairy herd of about twenty cows, most of which were bred on the farm. From twelve to sixteen calves were annually reared. The produce of the dairy was sold in milk, of which the annual yield was about 630 gallons per cow, and value £420. Delivery of the milk, which was sent to Paisley, cost about 1d. per gallon; and the other costs to be deducted from the profits were some £36 for two female servants engaged in the dairy, and about £10 per cow for food not grown on the farm. Cast cows realised about £250 annually, while other farm produce to the value of about £100 was disposed of in the same way.

The parish of Houston is pretty equally divided between the "gentle rising" and the flat division of the county. It is both rolling and flat in surface, and is withal a capital farming district. It principally belongs to Mr Alexander Archibald Speirs, of Elderslie, who is still in minority. The united area of the estates of Houston and Elderslie, the latter of which is in the parish of Renfrew, is about 12,000 acres; of these about 10,000 are arable, 700 pasture, 800 wood, and 200 under water dams. The total rental for the crop of 1884 was about £17,000, exclusive of feus, having increased to no appreciable extent since 1860. The soil over the estate is various; in the higher lying portion it is light and thin. The level land is good soil of moderate depth, frequently overlying a retentive subsoil. The average size of farms is about 120 acres, and they are generally in a more tenantable condition now than they were twenty-five years ago. The buildings in many instances have been enlarged and improved, while on five or six farms proportions of moss land, formerly of no value, have been reclaimed by

draining and trenching. These improvements have proved advantageous to all concerned, the new moss land having yielded fair crops, particularly of potatoes, for many years. Apart from the reclamations effected, a large amount of money has been expended in the draining and re draining of land; while within the past twenty years six or eight of the larger and better class holdings have been provided with handsome cottages for married servants. A few farms are held on a nineteen years' lease, but the greater number are now let on shorter terms—from five to twelve years. Incoming tenants obtain possession of the arable lands at Martinmas, and of houses and grass at the next Whitsunday term. The cost of buildings and draining is defrayed by the landlord, the tenants carting the materials and tiles, and paying 4 or 5 per cent. interest on the outlay unless where covered by rent. The average rent per acre is about 30s., the extremes being 18s. and £4. Rents are paid at Martinmas and Whitsunday, all in money. The rotation of cropping usually followed in the lower parts of the estates is a four-course system—(1) oats, (2) green crop, (3) wheat or oats sown down with grass seeds, and (4) hay; but no regular course exists in the upper reaches. In these latter portions no wheat is grown, oats being the only cereal; and after the hay crop has been reaped much of the land remains in pasture for several years. The cattle in both high and low districts are nearly all Ayrshires; many are bred and some bought in. A large quantity of bean meal is annually used for feeding dairy stocks. There is only one sheep farm on these estates. It is situated on the high grounds of Neilston parish, and some three-fifths of it is moorland. The flock kept on it consists of about 160 blackfaced ewes.

Within the past twenty-five years a considerable extent of matured larch and Scotch fir on Mr Speir's possessions have been cut down and replanted, and from thirty to forty acres of other ground has been put under wood.

On these estates Mr R. C. Young holds four farms—Fulwood, Netherfield, Chapel, and Birkenhead—or a total area of about 550 acres, for which he pays fully £1200 per annum. The soil is generally good, but with the proximity of several peat mosses it is liable to severe frosts in spring. Mr Young used to work his land under a four-years' rotation, but has recently, like many other Renfrewshire farmers, altered his system of working. Fewer potatoes are now grown than hitherto, and the cultivation of timothy hay has latterly come largely into vogue. The area of wheat has been reduced, and that of oats and permanent pasture extended. Mr Young ploughs land for green crop in the autumn, works and cleans it in spring, and sows in the end of May. It is dunged in the drill, chiefly with city manure, at the rate of from 30 to 40 tons per acre. In addition to

this some 3 cwt. of superphosphates is applied immediately before the seed is sown. He finds it advantageous, where the land for the turnip break is heavy, to sow a portion of it with beans. The potatoes grown are mostly of the Champion variety, which is to a large extent dunged with horse manure. As this manure is considered rather strong for bringing into immediate contact with the seed, it is spread over the surface of the stubble in the autumn, and ploughed down before the winter frosts set in. Cow manure, however, where applied, is put into the drill at the time of planting. Crops yield well as a rule. The average yield of cereals for five years, beginning in 1873, was as follows:—Wheat, 4 quarters, worth 42s. per quarter, and 38 cwt. of straw, worth £3, 10s. per ton. Oats, 6 quarters of grain, value 26s., and 28 cwt. of straw, worth £3, 10s. per ton. Hay yields from 36 cwt. to 45 cwt., and turnips about 15 tons per imperial acre. The four farms require fifteen horses, all of which are well-bred Clydesdales. Only Ayrshire cows are kept, of which a few are bred by the owner. Two dairy herds, comprising twenty-five and thirty cows respectively, are let to bowers at a yearly rate. The bowers each pay £15, 10s. per cow, receiving from Mr Young two loads of bean meal in addition to as much straw and chaff as they can economically use, and $4\frac{1}{2}$ acres of good turnips.

The neighbouring farm on the same estate is also named Fulwood, and is tenanted by Mr W. Fleming. It is extensive, level in surface, and mostly arable. It has been in the hands of the Fleming family since 1784, and is worked on a similar rotation to that adopted by Mr Young. The rental in 1880 was £950; while taxes, rates, and insurance are paid by the tenant to the amount of some £30. The crops raised are wheat, oats, beans, potatoes, turnips, cabbages, vetches, and hay; and excepting a slight decrease in the extent of potatoes and wheat grown, and an increase of hay during the past few years, no material alteration has occurred in the system of farming since 1860. Artificial manures are applied to the farm to the value of about £200 yearly, and good crops are generally obtained, the ordinary yield of straw per acre being about 250 stones; while hay reaches $2\frac{1}{2}$ tons, and turnips 15 tons, and potatoes 8 tons. The seed sown is mostly grown on the farm, but a few bolls of oats and wheat are changed every year.

The Flat District.

The lowland division is the most exclusively arable of the three. It is one long fertile plain—about 6 miles in length—and comprehends the parish of Renfrew and parts of Inchinnan, Erskine, Houston, Kilbarchan, and Abbey. In other words, it extends to some 12,062 acres, and is one of the most productive

and important farming districts in Scotland. The farms on it are all well laid-off, substantially fenced, and well supplied with wood as shelter for stock.

The parish of Erskine occupies the north-western corner of the plain, and contains a number of large and skilfully managed farms, the principal owner of which is Lord Blantyre. His Lordship's estate extends to about 7500 acres. It is wholly arable, with exception of 1800 acres of wood, of which 100 acres have been planted since 1860. The soil consists of three different kinds—(1) deep rich loam, (2) light sharp soil, and (3) stiff clay land. The average size of farms on this estate is 200 acres, and most of them have, in some way or other, been materially enhanced in value since 1860. Great progress has been made in building. All the building improvements were performed by the landlord free of cost, or charging the tenant interest, according to agreement. As a rule, no interest is charged, however, the improvements being generally taken into consideration on entering a new lease. This remark also applies to draining and fencing on an extensive scale, but small repairs or extensions in draining are made by tenants themselves, his Lordship supplying the tiles, and seeing that they are properly used. There has not been much land reclaimed for some time; but some 3 acres of moss land were recently taken in and put under crop at great cost. The expense was mainly caused by the sinking of the main drain, which is deep and substantially made. Fencing improvements carried out since 1860 consisted of the erection of 5 feet high stone walls and iron bar fencing. The farms are tenanted under a nineteen years' lease, the incoming tenants getting possession of arable lands at Martinmas and houses and grass at Whitsunday. Previous to the passing of the Agricultural Holdings (Scotland) Act, 1883, all the incoming tenants had to pay for was the dung and grass seeds of the young grass break, which the outgoing tenant was not allowed to graze with sheep or calves. The average rental over the estate is 42s. per acre, the extremes being 50s. and 34s. As might be expected from the extensive character of the improvements affected, rents have increased considerably—about 20 per cent. since 1860. The farms are stocked with Ayrshire and cross cattle mostly bought in. Few are fattened, but those that are tied up for this purpose consume a good deal of artificial food.

Amongst the numerous other well-managed farms on the estate is that of Glenshinnoch, tenanted by Mr John Park. Mr Park having succeeded his father in the occupancy of the farm, it has been in possession of the same family for over sixty years, and has long been intimately associated with the breeding of Clydesdale horses. It consists of rather light soil, but it

is wholly arable and mostly under rotation. It is wrought under an eight-years' course, and the rent in 1880, inclusive of rates and taxes, was £440. Only dairy cattle are kept, which are fed on grass during summer, and on turnips, straw, and bean meal in winter. The herd is chiefly kept up by home breeding. As might be inferred from the fact that close on £250 worth of artificial manure is annually applied to the land in addition to dung, good crops are generally raised. The cost of production per acre—rental being 42s., and rates and taxes 1s. 6d.—of each crop is approximately estimated thus:—*Wheat*—seed, 27s.; manure, 50s.; cultivation and harvest, 50s.; labour, threshing, and marketing, 39s. *Oats*—seed, 20s.; manures, 60s.; cultivation, &c., 50s.; labour, &c., 39s. *Barley*—seed, 16s.; manures, £8; cultivation, &c., 50s.; labour, &c., 39s. *Beans*—seed, 25s.; manures, £8; cultivation, &c., 50s.; labour, &c., 39s. *Potatoes*—seed, £5, 8s.; manures, £6; cultivation, &c., £6, 4s.; labour, &c., £4, 6s. 2d. *Turnips*—seed, 3s. 6d.; manures, £6; cultivation, &c., £4; and labour, &c., £5, 15s. The seed is changed as a rule every second year.

Another of Lord Blantyre's largest farms in Erskine is Hatton, which is occupied under a lease of nineteen years by the well-known Clydesdale horse breeder, Mr Walter Park. It is wholly arable, mostly light as regards soil, and extends to 405 acres. The rental in 1880 was £680. The seven-course shift has been in operation here for many years, and the land, which annually receives a large amount of artificial manure, gives a fair return. The crops grown are oats, potatoes and turnips, and hay, a considerable portion of which are consumed on the farm. Stock breeding and dairying are both extensively carried on by Mr Park, and feeding stuffs to the extent of about £500 are used every year. Of these about £300 worth are bought in. The dairy cows are partly let to bowers under the ordinary letting conditions.

One of the principal dairy farms is that of East Glenshinnoch, occupied by Mr James Lambie. The number of cows kept varies from twenty-two to thirty, most of which are reared on the farm. The dairy yield is variable; largely regulated by the character of the season and produce market. It ranges from £14, 10s. up to £19 per cow, the average being about £15, 10s. or £16. The newly-dropped calves—excepting some five or six which are annually required on the farm—are sold to the butcher at about 9s. or 10s. a head. The cows are largely fed on home-grown food, beans being cultivated for this purpose; but £3 a head for draff, meal, and treacle is no uncommon expenditure. The butter milk, and part of the butter, are retailed from the farm cart, while the remainder of the butter is put into shops. The shopkeepers sell it at 1d. per lb. of profit. The cart has

to travel a distance of 12 miles to the market, the number of outings per annum being from 150 to 200. The cost of delivery is thus a heavy item of expense, varying from £75 to £100 yearly. This, however, lessens the expenditure in commission for selling, and Mr Lambie estimates his proportion of the price paid by the actual consumer at about 90 per cent.

On the farm of Drumcross Mr John Samson keeps about thirty cows, the average yield per cow being about 600 gallons of milk per annum. The cost of marketing the produce amounts to about £100 per annum, still only about two-thirds of the price paid by the actual consumer reaches the producer. The annual sale of milk amounts to about £750.

The farms of Gladstone and Southbar are tenanted by Mr John Gibb. They extend together to 230 acres, about 150 acres of which comprise light red soil, 70 acres clay, and 10 acres moss. Though mainly arable, they are both to a large extent under permanent pasture. Both are held under lease,—Gladstone eleven years and Southbar nineteen,—and have been occupied by Mr Gibb for many years. Under a four-course rotation, some eight varieties of crop are grown, and a good many cattle, horses, and sheep are annually bred. The tenant finds breeding more profitable than feeding stock. In summer his cattle are fed on grass and small potatoes; the winter fare is more luxurious and varied—turnips, potatoes, bean meal, cotton cake, brewers' waste, with hay and straw. These are two of the farms which go to prove that Renfrewshire excels almost all other counties for variety of crop. No fewer than ten crops are grown every year on Gladstone and Southbar; and the approximate cost per acre of cultivating the principal of these has been estimated by Mr Gibb as follows:—*Wheat*—seed, 25s.; manures, 15s.; cultivation and harvesting, 30s.; labour, threshing, and marketing, 15s. *Oats*—seed, 13s. 6d.; manures, 25s.; cultivation, &c., 40s.; labour, &c., 18s. *Barley*—seed, 12s. 6d.; manures, 25s. 6d.; cultivation, 30s.; labour, &c., 15s. *Hay*—seed, 14s. 6d.; manures, 30s.; cultivation, &c., 10s.; labour, &c., 14s. *Potatoes*—seed, 70s.; manures, £13; cultivation, &c., 45s.; labour, &c., 25s. *Turnips*—seed, 3s. 6d.; manures, £8, 5s.; cultivation, &c., 45s.; labour, &c., 25s. *Beans*—seed, 18s.; manures, £8, 5s.; cultivation, &c., 35s.; labour, &c., 25s. *Cabbage*—seed, £2; manures, £15; cultivation, &c., 45s.; labour, &c., 45s. The average yield of wheat is about 4½ quarters of grain and 240 imperial stones of straw; the average return of oats is about 7 quarters. But from 1875 to 1877, inclusive, oats yielded 9 quarters of grain and 300 stones of straw. Barley returns about 4 quarters of grain and 150 stones of straw per acre. Two tons is a common return of hay, 18 tons of turnips, and from 7 to 9 tons of potatoes. Prior to

1880, potatoes, which are usually sold by the acre, realised about £28, but of late that figure has not been obtained. The land is liberally manured with both farm-yard and artificial manures, the average annual quantity of the latter being 35 tons. Since 1860 some improvements have been carried out in building and draining. Early in last decade the tenant re-drained the greater proportion of Gladstone farm, the landlord supplying the tiles. The average annual cost of labour on the farms varies from £600 to £700.

The parish of Inchinnan contains a few very good farms. One of the most skilfully managed is that of Park Mains, tenanted by Mr William Taylor. Extending to 375 acres, all arable, it comprises a large variety of soil, ranging from stiff retentive clay to sharp, kindly land. Light soil predominates. It is held on a lease of twelve years, and is rented at £2 per acre. The farm is cropped under the six-course rotation, and the cost per acre of producing the several crops grown is as follows:—*Oats*—seed, 16s.; manures, 25s.; cultivation and harvesting, 48s.; labour, &c., 11s. *Potatoes*—seed, £4; manures, £11; cultivation, &c., £7, 3s. 6d. *Turnips*—seed, 3s. 6d.; manures, £9; cultivation, &c., 85s.; labour, &c., £2. *Hay*—seed, 20s.; manures, 30s.; cultivation, &c., 15s.; labour, &c., 15s. *Beans*—seed, 21s.; manures, £9, 10s.; cultivation, &c., £3, 4s.; labour, &c., 48s. Oats yield about 5 quarters per acre, potatoes about 8 tons, turnips from 20 to 25 tons, and hay 2 tons. Besides these crops, wheat, mangold-wurzel, and beans are grown to some extent, which yield well. For green crop the stubble land is ploughed in the autumn or beginning of winter, and grubbed in spring. The dung is partly ploughed in in the "fall," and partly applied in the drill along with an allowance of artificial manure just before planting or sowing takes place. The annual expenditure in artificial manures is about £200. The live stock of the farm consists of Ayrshire cows and cross cattle, some good Clydesdale horses, and from 200 to 400 cross hogs and blackfaced ewes. The cows, excepting one or two kept for supplying the farm-house, are let to a bower; they are summered on the grass, and fed during winter on turnips, bean meal, &c. Their produce is sold in butter and butter milk. The sheep get an allowance of turnips, cake, and corn in winter.

Another well known and successful farmer in this district is Mr Alexander Lang. He has long occupied the farm of Garneyland, which comprises 187½ acres. Of these a considerable proportion lies under permanent pasture, and the rest is cropped under no specific rotation. The rental is regulated by the fiars' prices, and varies from £360 to £460; while rates and taxes amount to about £20 per annum. The farm carries a stock of bought in cattle and sheep, which are fed on grass with a little

cake in summer, and sold off before the dead of winter sets in. Various crops are grown, the cost per acre of which may be estimated thus:—*Potatoes*—seed, £4; manures, £12; cultivation and harvesting, 84s; labour and marketing, 45s. *Wheat*—seed, £1; cultivation, &c., 47s.; labour, &c., 14s. *Oats*—seed, 18s.; manure, £2; cultivation, &c., 47s.; labour, &c., 14s. *Beans*—seed, 22s.; manures, £10; cultivation, &c., 86s.; labour, &c., 14s. *Turnips*—seed, 5s.; manures, £10; cultivation, &c., 86s.; labour, &c., 40s. *Hay*—seed, 20s.; manures, 25s.; cultivation, &c., 16s. 6d.; labour, &c., 20s. The yields in bulk resemble those of Park Mains, while the annual quantity of artificial manure used is about 10 tons. The cost of labour per acre on Garneyland is about 25s.

The parish of Renfrew is well suited for arable farming. The soil is deep and good, and adapted for the growth of almost every kind of crop. It is highly rented, but it is productive, and, as a rule, is very skilfully farmed. Rents range from £2 up to £3, 5s. 4d. The latter sum is paid per acre by Mr Thomas Fulton for the farm of Shiels. This choice holding is worked under a four-years' course, and yields well. The return of wheat per acre is 5 quarters; oats, 8 quarters; barley, from 4 to 8 quarters; potatoes, 6 tons; turnips, 18 tons; and hay, 3 tons. Land intended for green crop is ploughed deeply in the "fall" of the year, and is grubbed in spring. If for turnips it gets 15 tons of home-made manure and 2½ cwt. of artificial manure per acre. For potatoes the land gets 35 tons of home-made manure, which is spread in the drills at planting time. Potatoes were at one time a principal crop on the farm, but have latterly fallen into secondary importance. The live stock consists of Ayrshire cattle, Clydesdale horses, and about 60 lambs. A few cattle are bred on the farm, but the stock are mostly bought in. They are mainly fed on the produce of the holding. The horses are good, and work the farm at the rate of 60 acres per pair.

A considerable change has been effected in the cropping of land in this district within the past few years. More hay, and less potatoes and wheat, are grown than formerly, but this change is not peculiar to Renfrew; it is more or less the case wherever these crops are grown.

The Agricultural Depression.

Renfrewshire was about the last to suffer from agricultural depression. It has shared bad seasons with other Scotch counties, but its extensive dairy investments have acted as a safety valve to farmers. Crop growing districts were the first to feel the pinch of depression, and they have suffered most all

along. The year 1879 was the most disastrous experienced in the west for a long period, and depression can scarcely be said to have prevailed to any extent before then. Since that year, however, its existence has become more and more apparent year by year. It has materially affected arable farming, inasmuch as it has necessitated, in many cases, an alteration in the system of cropping. Depression in the potato trade—formerly one of the lifespings of the county—has led to a limitation of potato growing; while a falling off has also occurred in the extent of cereals cultivated, owing to the reduced prices of grain. The prices of dairy produce have not been so much affected as where cheese and butter making are more extensively prosecuted. Sweet milk is a commodity with which the foreigner cannot possibly supply our populace, and the production of this, together with the proximity of markets and centres of consumption, has helped more than anything else to ward off the gloom of depression.

That the depression exists now, however, is too painfully true. It is attributed to various causes—foreign competition, bad seasons, and want of sunshine, high rents, hares and rabbits, low prices of farm produce, and deficient returns from the soil. All these are said to have contributed to the same end; but the chief cause undoubtedly is the great fall in the prices of farm produce since 1880. But while the depression has greatly increased in severity of recent years, it is gratifying to note that only eight farmers have, since 1879, availed themselves of the Bankruptcy Statute, 1856—five in the upper ward and three in the lower. Most of these bankruptcies occurred previous to 1882; there have only been one or two failures at most this year. As yet, farmers have not received much assistance in the way of permanent rent reduction, but temporary remissions have been made. There has, however, been no lack of candidates for good farms, and consequently none are vacant.

Rents—Leases—Rotation—Size of Farms.

Rents.—Less fluctuation has taken place in the farm rents of Renfrewshire than in almost any other Scotch county. This fact may in some measure result from care in bargain-making between landlords and tenants, but we suspect it is more largely due to the facilities of outlet and marketing of farm produce which the county has long enjoyed. At any rate, few striking advances have occurred since 1860, and still rents are high. With the exception of a few select patches of land in the vicinity of Greenock, which is let at the rate of about £4 an acre, they range from 20s. to 35s. over the lower ward, or western district of the county. Here they have risen from

15 to 25 per cent. since 1860—a little more in one or two cases—but the benefit has not been all on one side. The additional accommodation required by the tenants frequently exhausted any advantage that might have otherwise accrued to the landlord, and in such cases an advance of rent simply meant progress. In the neighbourhood of Paisley upwards of £3 per acre is obtained, and throughout the parishes of Inchinnan and Renfrew rents range from £2 to over £3. The same figures apply to the parish of Kilbarchan; while 37s. 6d.—40s. for arable land, and 15s. for grass—is about the average rental in the parishes of Neilston, Eastwood, and the outskirts of the Abbey of Paisley. The rental per acre in Mearns and Eaglesham runs from 30s. to 50s., except in a few cases, where it ranges as high as £3 and as low as 20s. In the parish of Erskine it varies from 30s. to 45s.; and in the far inland parish of Lochwinnoch, arable land is rented at from 17s. 6d. to 35s., pasture from 35s. to 55s., and meadow grass at about 20s. Hill pasture varies in value according to elevation and quality—from 3s. 6d. up to 7s. 6d. per imperial acre.

In travelling through the county one hears frequent complaints of excessive renting. There may be some grounds for these, but, from what we can learn, there is comparatively little to excite the sympathy of landlords. In the Kilmalcolm district, for example, several farms were recently easily enough let at former rents; for one small farm indeed a considerable increase was obtained. In the parish of Renfrew lately the farm of North and South Mossland, extending to 154 acres, and belonging to the community of the burgh, was let by public roup. There was a good attendance of farmers, and after a spirited competition, Mr Alexander Stewart, farmer, Benstone, Howwood, was declared tenant on a lease of nineteen years, at £2, 13s. per acre, a fall of 8s. per acre on the previous lease.

Leases.—With few exceptions, all the land is farmed under lease. The duration of lease varies somewhat, but the nineteen years' system is usually adopted. The leasing system is more popular in Renfrewshire than in some of the north-eastern counties of Scotland, and is not likely to be readily abolished. A few years ago, before farmers became affected by the depression through which we are passing, it was thought the lease system gave landlords an undue advantage over tenants. This idea, however, is now largely exploded, and the nineteen years' lease seems to have, in a measure, regained its popularity. After the very trying year of 1879, Mr Gilmour offered to relieve the whole of his Eaglesham tenants of their leases, but only one—a small grazing farmer—took advantage of the offer. This farmer left the farm, but no sooner had he gone than it passed into the hands of another, on a nineteen years' lease at an increased rent.

Almost the only farms held from year to year are on Sir John Stirling Maxwell's Eastwood and Cathcart property, and formerly these were let on short leases. In a few cases in the flat district of the county, farms are tenanted under leases of eleven and twelve years. On the Houston and Elderslie estates the nineteen years' lease at one time prevailed, but the greater number of farms are now let on leases of from five to twelve years' duration. The Agricultural Holdings Act, 1883, has in some instances slightly changed the conditions of exit and entry to farms.

Rotation.—Various rotations are adopted. Certain systems are prescribed in the conditions of lease on the principal estates, but only in one or two cases are these strictly enforced. This practically gives tenants what is much desired in many other parts of the country—freedom of cropping; but it is generally expected that farmers will conform to the estate regulations in the closing years of their leases. The four-years' shift prevailed for many years. Latterly, however, it has been losing favour, owing to the depreciation in the value of farm produce. Six, seven, and eight courses are now more common; while in many cases the land is allowed to lie under grass as long as it will retain it. In the Paisley district the five and six shift rotations have to a large extent taken the place of the four-course shift; two successive white crops being occasionally taken. The four-course system, and what may be put down as the crop rotation of the county, is (1) white crop—oats, wheat, and barley, (2) turnips and potatoes, (3) white crop, and (4) hay. In the great majority of cases these are followed by two or three or more years' grass. On many farms formerly devoted to crop growing, comparatively little is now broken up, the bulk of the land being under permanent pastures.

Size of Farms.—There are numerous classes of farms in the county. Small farms have been gradually diminishing during the past twenty-five years; still there are more holdings under 20 acres—some 432—in extent than in many larger counties. At present the total number of holdings of all sizes is 1288, which may be classified (with the acreage of each class) thus—

	50 Acres and under.	50 to 100 Acres.	100 to 300 Acres.	300 to 500 Acres.	500 to 1000 Acres.	Above 1000 Acres.	Total.
Farms,	613	319	341	9	5	1	1288
Acreage,	9405	24,778	53,495	3452	3464	1001	95,595

Buildings—Drains—Fences—Roads.

Buildings.—In no other department of agriculture has greater activity been shown than in building. Since 1860 building operations have been almost continually going on. In Kilmalcolm many old-fashioned thatched structures have given place to substantial, commodious, and convenient farm steadings. On the Garthland estate, in the parish of Lochwinnoch, nine new steadings have been erected within the last ten years, and several repaired; while further east similar progress has been made. The most enterprising landlord in this respect, however, is Lord Blantyre. He has built many handsome farm houses during the last twelve years, and his estate is now well provided with cottage accommodation. His exertions are worthy of imitation, for in this, as in many other Scotch counties, there is a manifest lack of accommodation for married labourers. The cottages his Lordship has erected are neatly and conveniently designed, and are of inestimable value to his tenants. The steadings he has built include dairying establishments, which are as novel in construction as they are convenient and useful. One of these has recently been erected on the farm of Hatton. It is so planned as to protect the manure from rain and sunshine, and thus prevent the escape of ammonia and other valuable ingredients. It affords accommodation for two distinct herds—two bowers—and is built in the form of a cross. The centre block is 120 feet long, 30 feet wide, and comprises two byres, each stalled for twenty-six cows; while each of the side wings contain a dwelling-house, milk-house, scullery, and stable. The milk-house enters immediately off the byre, and is so arranged as to insure cleanliness and coolness. The scullery and churning-house adjoin the milk-house, and besides some improved dairy utensils, such as an ingenious patent refrigerator for cooling the milk, and butter churn, we here observed a novel feature of arrangement which every dairy farmer might introduce with advantage. We refer to the system adopted of loading the milk-cart. The ground behind the churning-house has been excavated in order that the cart when backed—as if into a shed—is on a level with the floor of the house. The barrels are thus taken out, thoroughly cleaned, refilled, and replaced on the cart with the utmost ease. The most valuable feature of the structure, however, is undoubtedly the arrangement by which the manure is preserved from exposure. Below the byres is a large vacuum, into which the dung is deposited through a series of trap-doors. This facilitates cleaning in the byres, and as these are substantially floored with cement and the trap-doors thoroughly secure and tight-fitting, no deleterious smell or

matter can rise from the dung-pit below. Above the byres is erected a commodious hayloft, from which fodder is conveyed to the racks by means of a suspending shaft. As a whole the building is exceptionally complete, and for those interested in dairying it is worth going far to see.

A great many open sheds for the storing of hay, &c., have recently been erected over the county. The extended cultivation of hay has given rise to a demand for these, and they are found to be specially valuable in Renfrewshire, owing to the moistness of the climate.

Building improvements as a rule are carried out at the expense of the landlord, the tenant, in addition to carting the necessary materials, being charged a certain percentage on the money expended.

Drains.—In the extensive land reclamations carried out during the past thirty years, draining was made the primary agent. And it is right that it should be so. Thorough draining is absolutely indispensable, either in the reclaiming or the successful cultivation of land, and this appears to be fully recognised in Renfrewshire. Efforts are made to keep the land dry, and this is no easy matter where the subsoil is stiff and retentive. In what is known as the "Greeting" land of Inverkip, for example, it is almost impossible to secure adequate drainage, and the crops and grass grown on it are consequently inferior in quality. By draining alone a considerable extent of rough, swampy land in the parish of Kilmalcolm has been increased in fertility and rendered valuable for crop growing. Drains vary in depth from $2\frac{1}{2}$ to 3 feet, and their width apart is governed by the condition of the land. The work is generally executed at the landlord's expense, the tenant being charged from 4 to $6\frac{1}{2}$ per cent. interest on the outlay. In a few exceptional cases, however, the tenant performed the work at his own expense, the landlord simply supplying the tiles.

Fences.—These are generally good. So much was done in the way of enclosing land prior to 1860 that little extension has been required since then. The farms and fields are substantially enclosed, and a large extent of hill land has recently been fenced on the Eaglesham estate. Like building and draining improvements, fencing is generally performed at the mutual expense of landlord and tenant, and it consists of four different kinds—hedges, dykes, and wire and iron bar fencing. Hedging prevails over the flat district, and is occasionally to be met with in the middle district; but in the latter as well as in the higher lands stone dykes constitute the principal fence. Wire fencing is used to some extent over the greater part of the county.

Roads.—These traverse the county in all directions, radiating from Glasgow, Paisley, Johnstone, and Greenock, and extending

into the adjacent counties of Ayr and Lanark. Generally speaking, they are good and well kept. For the management, maintenance, and repair of public roads a tax of 8d. per £ is levied—payable equally between owner and occupier. Road debts, however, are wholly payable by the proprietors, and for this purpose an assessment of 1d. per £ is imposed. Several private roads have been made since 1860, and as a rule the county is abundantly supplied with roads of various classes.

Manure.—For many years city manure has been largely used by farmers. Since the opening of the Glasgow and South-Western Railway in 1869 town manure has been freely imported from Glasgow to the central districts; while Inverkip farmers have still longer enjoyed access to the city depôts. This was secured for them by the formation of the Glasgow and Wemyss Bay Railway in 1860. Previously lime and guano were the principal stimulants applied to the soil. Lime is still given where necessary, but the use of guano has greatly diminished. The city manure is considered to have greatly aided cultivation, and thus raised the value of land, enabling farmers in some instances to keep a third more cows than the same area of land carried in 1860. It costs about 2s. per ton, or 13s. per truck of 7 tons, and is carried from Glasgow to the Kilmalcolm district at about $\frac{1}{2}$ d. per ton per mile. Artificial manures, such as superphosphates, are also extensively used, especially in the flat district.

Farm Machinery.—Another powerful influence has been brought to bear upon the cultivation of the soil by the introduction of new and improved farm machinery. Since 1860 a great advance has been made in this respect. Some twenty-five or thirty years ago the grain crop was mainly threshed by the "flail" in several districts, and on a very few farms this ancient instrument retains its hold. In the extensive parish of Kilmalcolm there were only three or four threshing-mills in use in 1860. The "flail," however, may be said to have nearly fallen into disuse prior to 1870. It was superseded by that more expeditious "workman," the threshing-mill, which is now in use on every arable farm. The working power is by water, horses, and steam—water being generally used where practicable. On the estate of Sir Michael R. Shaw Stewart the mills are principally driven by water, and mostly fitted with turbine wheels. Steam is seldom used except with portable mills, by which a large quantity of wheat is threshed during the month of March, but the motive power is frequently supplied by horses. Barn machinery has latterly been increased on the principal farms by the introduction of grinding or bruising machines, most of which are wrought in conjunction with the threshing-mills. Field implements are of the newest

sorts. The reaper has to a large extent superseded the scythe, while ploughs, harrows, grubbers, and carts are all of modern and improved make. The steam plough has been tried on several estates, but found unsuitable except in the cultivation of newly reclaimed moss, which would not bear the weight of horses.

Grain Crops.

The thirty-three counties into which Scotland is divided arrange themselves into three separate classes—(1) pasture, (2) corn growing, and (3) mixed farming. Six belong to the first class, eleven to the second, and sixteen to the third. In the last-named group Renfrewshire holds a place; but for some time past it has been inclining to the pastoral class. In this respect, however, it is not singular. All the counties in which the “tug-of-war” has been going on between cultivation and pasture for the past quarter of a century have tended more or less in the same direction. For some twenty years prior to 1880 it ran Linlithgowshire very closely for the ninth place, which it has latterly succeeded in attaining. But this conquest has not materially altered its relationship to any of the other Scotch counties in the matter of grain cultivation. It still stands much nearer the bottom than the top of the list, and there is no immediate appearance of further promotion. The area devoted to the production of grain crops has been computed thus:—

Year.	Wheat.	Barley and Bere.	Oats.	Rye.	Beans.	Pease.	Total acreage White crop.
	Acres.	Acres.	Acres.	Acres	Acres.	Acres.	
1857	4764½	523½	17,097½	74	1232½	8½	23,700½
1870	3362	250	14,088	38	644	11	18,393
1875	2712	291	13,921	6	750	4	17,684
1881	2756	339	14,094	20	492	11	17,712
1885	1892	153	14,240	2	495	24	16,806

These statistics explicitly show the direction in which the agricultural industry of the county has been moving during the past twenty-five years. Every crop has decreased materially since 1857, excepting pease, which is of comparatively little importance. The falling-off over all amounts to some 6794 acres. Between 1857 and 1870 there was a decline of no less than 5307 acres, or nearly four-fifths of the total decrease of the past twenty-seven years. The decline since 1870 has been very gradual, the extent of cropping being regulated by the state of the farm produce market. Harvest operations are, as a rule, first begun in the eastern parishes. In ordinary years

crops arrive at maturity at various times from the 20th of August on to the middle of September.

Wheat.—This cereal was at one time extensively cultivated, even more largely than the foregoing table indicates. During the past thirty years, however, it has been on the wane, and since 1881 has fallen away very considerably. It is now almost exclusively confined to the flat district of the county, and even on the best land it is diminishing. Not many years ago it was grown on most of the leading farms in the Mearns and other upland parishes, but it is now wholly given up in these parts. Even in the parish of Erskine, where it used to be annually grown to the extent of about 300 acres, its area has been reduced to a few acres. Winter wheat is sown about the middle of November, 3 bushels being the ordinary allowance of seed per acre. On most farms from 8 to 10 bushels of bought-in grain is annually sown, which prevents the use of too old seed. The varieties principally grown are "Hunter's White" and "Woolly Ear," which are sometimes mixed with advantage. It is supposed that the lighter topped sheaf produced by the mixture lessens the liability of the grain to be damaged by wet in the stook. Wheat is seldom manured, but occasionally it gets a sprinkling of artificial stimulant when grown after a heavy crop of beans. Its yield varies from 3 to 5½ quarters per acre, and when well harvested the grain weighs from 58 to 60 lbs. per bushel. The return of straw averages about 1½ tons per acre. Some years ago wheat straw was in great demand for use in city stables and elsewhere, and high prices obtained for it. A like quantity will only realise 14s. to 16s. now. The grain is mostly threshed by portable mills, which perform the work at the rate of about 50 quarters per day, the ordinary cost of a day's threshing being a little over £5.

Barley.—There has been a still greater decrease in the extent of barley. It has fallen away to a mere fraction of its former area, the reduction since 1857 having been 5079 acres—more than thirty-three times its acreage in 1885. It is wholly confined to the middle district of the county; and about 4 bushels of seed yield, on an average, rather more than 4 quarters of grain per acre.

Oats.—This is the staple cereal. Though nearly 3000 acres short of its acreage in 1857, it has increased somewhat of recent years. The varieties in favour in the lower district are the "Hamilton" and "Providence" oats; while the "Hamilton," "Sandy," and "Tam Findlay" sorts are most extensively cultivated in the Mearns and western parishes. A common seeding in the earlier parts is 4 bushels per acre, but in the higher and western districts, where the climate is more severe, 5 bushels are generally allowed. Sowing takes place in the end of March.

When the hay stubble-land is broken for oats, a supply of city manure is occasionally ploughed down; but a common practice is to top-dress with artificial manure in spring. Gas lime is used for this purpose in the later districts. It costs only about 1s. 6d. per ton, and is found to be an effectual stimulant. If the seed and crop are healthy, very heavy yields are occasionally obtained. The return, on the finer and earlier farms ranges from 5 to 6½ quarters per acre, the average weight of grain being 41 lbs. per bushel. In the inland parishes, such as Mearns and Kilmalcolm, 4½ quarters is considered a good yield, while grain seldom exceeds 39 lbs. per bushel. It is mostly threshed with the ordinary farm mill, and disposed of in Paisley or Glasgow, the straw being wholly consumed in the county.

In this county, as elsewhere, this cereal is sometimes depreciated by "tulip root." This disease is almost the only one that preys seriously upon the oat crop, and it is ill understood by farmers. The plant, when attacked, breaks up into two or three stunted unfruitful stalks, and when examined a worm is generally found feeding on its roots. But "tulip-root" is not peculiar to Renfrewshire. In the counties of Ayr, Linlithgow, and Mid-Lothian, at least, it has wrought serious havoc in recent years. We have had some communication with Miss E. A. Ormerod, the well-known entomologist of the Royal Agricultural Society of England, on the subject, and she seems convinced that the attack is caused by very minute hematoid worms, sometimes known as eel-worms; scientifically they were formerly known as *Vibrio*, now the many kinds known are classed together as *Anguillulidæ*. These wormlets are too small to be distinguished in the diseased oats by the naked eye. When magnified they are cylindrical, very long and narrow, somewhat tapering at each end, whitish and transparent. But as to the origin of the disease there is great diversity of opinion. A Linlithgowshire farmer says:—"Two years ago I sowed a few acres with oats after beans, the rest of the field being barley; the barley was a good crop after turnips. The oats were all tulip-rooted, two rigs after turnips being worst. The field is oats this year, and the portion which was under oats two years ago was so badly gone with the disease in the beginning of June, that I have ploughed them down. The two rigs were even worse again after the turnips, and the rest of the field, which was barley, is quite clear of it. Now this clearly proves that the change of crop saved the rest of the field." A shrewd Mid-Lothian farmer attributes the disease to too frequent cropping; and he finds that the finest varieties are most liable to suffer. He does not believe the manuring, or the manure used, has anything to do with the disease. Miss Ormerod, on the

other hand, thinks that, in virtue of the wonderful power of *Tylenchus tritici* to recover, being moistened after lengthened confinement in their galls, there is a possibility of the disease being spread through the use of farmyard manure being mixed with diseased straw. If this be so, attention should be paid to collecting and burning rubbish in order that the wormlets may be destroyed. Deep ploughing, which puts such a weight on them that they cannot come up, is strongly recommended, but care should be taken that once down, they are left down not brought up again by subsequent processes of cultivation, and probably a dressing of gas lime, in caustic state, on the surface, would be efficacious in destroying the eel-worms on the surface. There can be no doubt that the rotation of crops is an important point to consider in attempting to remedy the disease. An Ayrshire farmer has satisfied himself that tulip-root is due to too frequent cropping. About 100 acres of his farm has been worked under a four course rotation, viz., green crop, wheat, hay, oats,—and here the disease has been very disastrous. The other portion of his farm has always lain a few years under grass every rotation, and the disease has never appeared on it. In one or two cases the disease has been cured by a certain mode of treatment; and though this might not be remedial in every case, the following instance of successful treatment may be quoted: “On the first symptoms of disease appearing, the crop received a top-dressing of nitrate of soda, but this had no effect in checking its progress, and it became evident that the crop was likely to be destroyed. A trial was then made of half a cwt. per acre of sulphate of potash, which had the immediate effect of restoring life to the plant, and effectually causing the disease to disappear. The crop is now fully an average, and a small portion of the field, which was thought not badly affected, and received no top-dressing, is a failure.”

Rye.—This crop has dwindled almost to nothing. At no time did it occupy much space, but, with exception of a slight revival about 1881, it has declined very rapidly since 1857.

Beans.—The bean crop has diminished nearly two-thirds within the past twenty-five years. Home grown beans are ground and used on a good many farms, and, though the crop scarcely covers 500 acres at the present time, the extensive dairy interests of the county save it from absolute extinction. The land for beans is wrought similarly to potato land, and the seed, which consists chiefly of the Kilbride and Granton varieties, is sown in drills; about 5 bushels per acre is an ordinary allowance of seed. Bean manure, whose principal constituent is potash, is liberally used, and from 40 to 50 bushels per acre is an average yield. The crop is harvested

about the middle of September. It is shorn with hooks or reaping machine, and allowed to lie unbound until nearly dry.

Pease.—This crop has nearly trebled in extent since 1857, and yet it has only reached 24 acres. Its extension is due to depreciation in the crop-growing value of land.

The fiars' prices of the county, for various years, were as follows:—

Fiars' Prices.

	1830.	1860.	1865.	1870.	1875.	1880.	1885.	Average since 1878.
Wheat, { Best. { Medium.	£2 16 11 2 15 5½	2 8 11 2 6 1½	£2 3 8 2 2 5½	£2 7 0½ 2 6 7½	£2 1 1½ 2 0 4½	£2 3 2½ 2 2 9½	£1 8 3 1 5 1½	£1 15 11½ 1 15 0½
Bailey, { Best. { Medium.	1 13 4½ 1 12 3½	1 13 5 1 11 8½	1 8 10½ 1 7 3½	1 13 0 ..	1 13 3½ 1 12 9½	1 12 11½ 1 10 11½	1 6 0 1 5 0	1 10 1½ ..
Oat, { Best. { Medium.	1 7 0½ 1 6 4½	1 6 0 1 4 11½	1 3 10 1 2 11	1 4 4 1 3 11½	1 6 4½ 1 6 3	1 1 4½ 1 1 2½	1 1 0 0 19 6½	1 1 11 1 1 5½
Oatmeal, { Best per boll of { Medium. 140 lbs.	1 0 7½ 1 0 0	1 0 11½ 1 10 0	0 18 2 ..	0 18 7½ 0 18 6½	1 0 9½ 1 0 9½	0 17 1½ 0 16 11½	0 15 11½ 0 15 10	0 17 5½ 0 17 4½
Beans, { Best. { Medium.	1 16 6 1 15 9	2 14 0 2 7 0	2 4 6 ..	2 4 0½ .	2 6 0 2 4 10½	2 1 0 2 0 3½	1 11 0 1 10 9	..

Hay—Grass—Permanent Pasture.

Hay.—This is the principal forage crop. It has latterly been regaining lost ground, and is now more extensively cultivated than at any time since 1857. As the following table will show, it has increased fully 5000 acres within the past four years :—

	1857.	1870.	1875.	1881.	1885.
	Acres.	Acres.	Acres.	Acres.	Acres.
Grass and hay, . . .	41,598½	22,791	18,283	18,321	23,573
Permanent pasture (exclusive of heath and mountain land, . .	...	4585	46,516	49,467	48,268
Bare fallow and uncropped arable land,	221	642	234	345	375

Its development has not been confined to any particular district. Upland and lowland alike, the hay crop has widened its area; and though prices are not now so high as they have been, it still retains the distinction of being the most profitable crop grown. It is made up of Italian ryegrass and Timothy hay, both of which are pretty equally distributed over cropping districts of the county. An ordinary allowance of seed, which is put in a week or ten days after the corn is sown, is about 2 bushels of ryegrass, and from 4 to 6 lbs. of clover per acre,—the quantity of clover seed increasing with the natural rise of the district. The crop is liberally manured, sometimes with city manure, but more commonly with nitrate of soda, or sulphate of ammonia; and yields, on an average, about 2 tons per acre. Some of the strong land in the flat district gives an extraordinary return, occasionally approaching 3 tons, and the stiff soil of Lochwinnoch is also well adapted for the cultivation of ryegrass. On light thin land the yield dwindles to about 1 ton per acre.

Timothy hay is raised to great advantage. For twenty or more years it has been grown on an extensive scale in this county, and is year by year receiving increased attention from farmers. The cultivation entails a good deal of labour, as the land must be thoroughly cleaned and well prepared for the reception of the seed. A moderate seeding is 20 lbs. per acre, and, for the sake of the first year's crop, this is mixed with Italian ryegrass and clover seeds,—the Timothy does not hay till the second year. It yields from 3 to 4 tons per acre, and commands good and remunerative prices in Glasgow and

Paisley. Where water can be got, irrigation is carried on. This system never fails to increase the yield, and, with the assistance of a little city or other manure, it enables farmers to crop the same land for six, seven, and eight years in succession, with impunity. The Timothy meadows are so situated on several farms as to use up all the liquid manure about the steading. This invariably secures an excellent return, and, at the same time, keeps the soil in good heart. Where such stimulant cannot be had, police manure and nitrate of soda are freely applied with good results.

Ryegrass hay-making usually begins with the month of July in the lowland districts, and about a week later in the uplands. Timothy hay is reaped about the middle of July, and rich crops of aftermath are usually available by the first or second week of September. This second crop, however, is not generally cut; excepting in the neighbourhood of towns it is, as a rule, all pastured with stock. Farmers in the vicinity of towns have many advantages. One of these in this county is the ready outlet they enjoy for superfluous fodder or farm produce of any kind. Some farmers let considerable tracts of land to townspeople for raising early grass. This grass is timed to be cut in May, and is followed by a second crop, which is mown towards the end of August, and similarly disposed of—sold in small quantities to contractors and cowfeeders in town.

The all-important operation of harvesting the hay crop is often rendered tedious by unseasonable weather. Serious losses sometimes result from excessive rains, and the hay-making season is one of the most anxious with the Renfrewshire farmer. If the weather is good, the work is very expeditiously performed, and continued sunshine enables farmers to cut and stack their hay in the course of ten days. Hay, intended for seed, is cut a week or so later than that for purely forage purposes; and, with the crop maturing irregularly in this manner, the work of hay-making engages attention from the first of July till the third week of August. When cut for "seed," ryegrass hay is bundled into sheaves, and "hutted," and, as soon as practicable, thrashed. About 24 bushels is the average yield of seed per acre, which sells at various prices from 2s. up to 2s. 3d. per bushel.

Permanent Pasture.—The disastrous seasons intervening between 1872 and 1879 inclusive, rapidly increased the extent of permanent grass. Since 1880, however, it has declined somewhat as the result of extension in hay-growing, but it is probable that it may ere long resume its progress. The best quality of pasture is found around the mansions of the nobility. These include the policy grounds of such residences as Erskine House, South Bar, Blythwood, Blackstone, Elderslie, Pollock, Hawk-

head, &c. It is generally let annually by public roup, and principally used for feeding cattle—store beasts or in-calf cows, called back-calvers.

Silos and Ensilage.

The new system of preserving green fodder, known as ensilage, has been tried on several farms and estates. Renfrewshire, indeed, was one of the first counties to bring the silo to practical test. Upwards of twenty silos are already in use, and their owners almost to a man seem gratified with the results of their experiments.

Mr D. M. Hannay, Langhouse, Inverkip, constructed one silo. It is 9 feet square and 10 feet deep, and is built of concrete. Though mainly a converted building, its erection cost £13. It is filled with meadow and plantation grass, unchaffed, cut in August, and weighted to the pressure of 50 lbs. per square foot. The silo is filled at various times, and is opened in the end of January. The preserved grass or silage is then given to stock with good effect. When given to dairy cows at the rate of about 50 lbs. per day, along with two mashes, it greatly increases the product of milk.

Mr Laird, Bow Farm, Greenock, three years ago built two silos—one a small stable 15 feet long by 12 feet wide, its depth being 10 feet; and the other a pit in a field 25 feet long by 16 feet wide, the depth being 6 feet. In the converted building, which cost £5, a small door was taken out of the gable for the purpose of filling, while it was fitted with a door at the bottom, by which the silage was removed. The walls are pointed with cement, and the floor of the silo is above the surface of the ground. The field silo cost only 14s., two days of a man in casting it 7s., two days thatching and finishing it up 7s., and a stack of straw was built on it and thatched. The material ensiled consists of plantation and roadside grass in the bottom and aftermath on the top. The stable was three times filled, and the pit once. The weighting is supplied by stones to the extent of 160 lbs. per square foot in the stable, and a little less in the pit. The silage was trodden and beaten with stob in the stable, and by a horse in the pit. The filling up of the converted silo was commenced in July and finished in the first week of September, while the pit was filled in the first week of August. The latter was opened about the first week of January, and the former about two months later. The silage was good in both cases, excepting a slight waste on the top of the pit and round the edges of the stable. It was given to dairy cows after the supply of cabbages was finished, and did not materially alter the flow of milk. Cattle got an allowance of it daily in

addition to turnips, hay, straw, and bean-meal, and they seemed to relish it; but Mr Laird considers that, like draff, it is sore upon cows, that they are never so full and contented as after chopped and dried food. Not having put any cows exclusively on silage, or weighed or measured the milk produced, he cannot say what the exact value of silage is as food. But before trying he thought its advocates claimed too much for it when they said the fodder would come out of the silo 25 per cent. better than when it was put in, and that it would enable the distressed agriculturist to surmount all his difficulties. The impression he formed of it after two years' experience was this, that the system involved three losses from the newly-cut grass—loss in feeding quality, loss by waste on the top and sides, and loss in weight. "Still," he adds, "there is no other way of getting green fodder all the year round."

Mr Smith, the tenant of Burnside, Kilmalcolm, is an enthusiast in the manufacture of silos. He erected one 32 feet long by 6 feet wide and 7 feet deep. It consists of concrete and cement, and cost £10, which was paid by the landlord. The silage is filled at various dates, and contains soft grass, oats, tares, ryegrass, clover, and weeds, and is carefully trodden and weighted with stones. The silo is opened early in spring, and the silage is very much relished by cows and other cattle. Mr Smith is highly satisfied with his success, and this year he has extended his operations. He has not had one per cent. of damaged fodder, and whether or not the process of ensilage improves the feeding value of fodder, he is convinced that it makes some plants more palatable if not more nutritious.

Lord Blantyre has tried the ensilage system on an extensive scale. At his home farm he built four most substantial silos under one roof. They are made of brick and cemented inside, concrete being used both in the walls and floor. Each silo measures 18 feet by 12 feet, and is 12 feet deep. They are sunk 3 feet below the surface, and are roofed with wood and slates. The total cost of the building was about £290. In previous years the silos were filled with green laid oats, beans, and tares, and all kinds of grass. The grasses turned out more satisfactory than the other fodder used, and were greedily consumed by stock; "and," his lordship's factor writes, "for clearing the avenues of soft grass and clearing road sides we have found the silos most useful, and the silage made from such feeds more stock than ever the inferior hay did made in former years from these grasses." This year two of the silos are filled with grasses and two with chopped beans, and his lordship awaits with interest the result with regard to the last-named rather novel material. The grasses are ensiled for the period of three months. They are weighted by means of planks

and 56 lb. weights. These weights are convenient in as much as they are easily moved, and enable a man to regulate pressure as required. At the outset of the experiment it was thought that too much pressure could not be obtained, and in former years about 70 lbs. per square foot were brought to bear on the ensiled mass. Experience has shown, however, that less weight is sufficient, and the pressure has been reduced to some 25 lbs. per square foot. So far as can yet be observed the lessened weight is proving beneficial, the silage being sweeter than previously. The results of his lordship's experiments in past years were highly satisfactory, silage-fed cows producing decidedly better milk and butter, and more of them, than when fed on dry and matured fodder. About 30 lbs. of grass silage was given to six quarter old cattle daily, and all did well except a lot of bullocks, to which it seemed distasteful.

On the farm of East Glenshinnoch four silos were constructed by the landlord, and carefully filled in October with unchaffed clover and second hay and vetches by the industrious tenant, Mr Lambie. Each silo is 18 feet long, 9 feet wide, and 12 feet deep, and the cost of the four—all new—was £114. The tenant performed the cartages, which are not counted in the estimate. The walls are brick, coated with cement; the floor concrete, coated with cement; and the roof wood and slates. The building is sunk 2 feet below the surface. The silage is weighted with planks, 1 foot broad, 3 feet thick, and 9 feet long, and 56 lbs. weight, to the pressure of $2\frac{1}{2}$ cwts. per square yard. Not much waste has as yet been discovered, only a little on the top of the mass; but silage is never given to cows more freely than ordinary clover hay. It has not affected the supply of milk to any appreciable extent in this case, but, nevertheless, it was found to be good food for stock. Mr Lambie disapproves of chaffing the fodder before ensiling it, because this makes it more difficult to press; and also of putting hay or oats into the silo, provided they could be preserved any other way. The silo he finds most efficient and useful in preserving second crop clover, grasses, meadow hay, and green oats in later districts, and he thinks it should be a great boon to upland farmers. He believes it to be a source of health for his cattle in spring, after turnips are done, and he intends continuing the ensilage system for that reason.

In the Lochwinnoch parish also this novel system of preserving grass has been introduced. On the farm of Muirhill, Mr C. Methven tried it in a silo measuring 21 feet long, 10 feet wide, and 10 feet deep. The back of the silo consisted of a stone wall built up the face of a high earthen bank, and the ends and sides are formed of boards. The silo cost £7, 10s., and was filled with unchaffed meadow grass. The weighting

was supplied by means of casks filled with stone refuse, the average pressure being 112 lbs. per square foot. The filling operation occupied twelve days, $2\frac{1}{2}$ tons being put in each day, and the silage remained in the silo for fully four months. Some of it was damaged round the edges, but the bulk of the fodder was good when taken out. It was freely supplied to cows, along with 4 lbs. of bean meal and chaffed hay (steamed) per day, with good results. It not only increased the supply of milk, but considerably enriched its quality. Mr Methven considers that, in a changeable and late climate, such as that of his district, ensilage is of great advantage to farmers, as the loss in saving meadow hay in September is very great nearly every season; while with a silo there is very little loss. He tried it in 1884 as an experiment, and he intends to continue it.

We believe that ensilage in Renfrewshire has, if anywhere, a great future before it. The experiments carried out conclusively prove its utility, and the initiatory expense is probably the only barrier to its adoption. It is specially useful in late and wet climates, and this peculiarity singles it out as a matter of special importance to the farmers of this county. An extensive farmer in the parish of Neilston, writing to us the other day, says:—"I believe that silos will be of great advantage to farmers. One of my neighbours built one last year, with the result that the ensiled grass was nearly twice over the worth of ordinary fodder as food for stock. And, besides, this system saves both labour and risk in securing hay in bad weather. I visited the silo, and was much pleased with it. The effect of silage on the dairy cows was an increase of both butter and milk." This is no isolated opinion. Many farmers in the county are favourably impressed with the system. Some little difficulty is experienced in the matter of weighting, but it will gradually disappear as the practice extends. It has already been successfully overcome in one instance, at least, at Ardgowan, the home farm of Sir Michael R. Shaw Stewart, by the adoption of a screw. This supplies adequate and very equal pressure, and may in course of time be brought into common use. An influential factor in the county says:—"I uphold silos in Renfrewshire as being of great use in the saving and preserving all kinds of grass, and in increasing the feeding value of the same."

Green Crops.—The acreage of green crops is fully a third less than that of 1857. Since 1881 it has decreased 1824 acres. The following statement shows the extent to which the various crops of this class are grown:—

Year.	Turnips and Swedes.	Potatoes.	Cabbages and Rape.	Vetches, &c.,	Man- golds.	Carrots.	Total.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1857	3470	5729½	94	205½	76½	18½	9894
1870	2363	5486	59	254	39	12	8216
1875	2524	4270	150	228	136	13	7321
1881	2079	6042	83	222	52	16	8494
1885	2432	3738	268	178	41	13	6670

Turnips.—These have not lost favour so fast or so far in Renfrewshire as in many other counties. They cover fully a thousand fewer acres than in 1857, and only occupy 2432 acres, still they are grown to some extent on every arable farm. The falling off is due to the extended use of dry food on dairy farms, to which we elsewhere refer. Land for the turnip crop is ploughed in the fall of the year, and then either ploughed again or grubbed, and frequently harrowed in spring. Farm-yard or city manure is applied at various times. Some farmers plough it down in the autumn, while others prefer spreading it in the drills just before sowing. The allowance in either case varies from 25 to 30 tons per acre, and is supplemented with a few cwts. of artificial manures after the land is drilled. Swedish turnips are more heavily dunged than the other sorts, and are usually first sown. Sowing begins with Swedish turnips shortly before the Whitsunday term, and other sorts as soon as possible thereafter. Swedish seed is allowed to the amount of about 4 lbs. per acre, while from 3 lbs. to 4 lbs. is considered adequate seeding for yellow turnips. The plants, unless injured by the "fly," which occasionally necessitates second sowing, or retarded by some other untoward influence, are generally ready for singling by the first of July. They are left further apart than in most other counties—from 9 to 11 inches. Both before and after being hoed the drill-harrow is energetically set to work and weeds are wonderfully well kept down considering the wet climate. The crop is pulled and stored as a rule in the month of November, but roots are used long before that time. The earliest bulbs are given to stock on some lowland farms before the end of September, being fed with well-studied moderation at the outset. Both Swedish and yellow turnips yield very irregularly—from 12 tons per acre on some upland holdings to 25 tons on the rich lowland soils. The average yield of swedes may be put down at about 18 tons, and yellow turnips at about 16 tons. The roots are stored either in small pits on the land, or carted to the farm-steadings, where they are heaped into long rows about 3 feet deep and covered with potato haulms,

straw, and earth. Considerable quantities are sold by farmers in the neighbourhood of Paisley or Glasgow, the price of swedes being about £1 per ton, and yellow turnips 15s.

Potatoes.—The reduced demand and value of the favourite esculent have influenced potato cultivation in a marked degree. Some six or seven years ago potatoes occupied nearly two-thirds of the entire area under green crop, and reached to over 6000 acres. Now, however, matters have vastly changed. The stagnation of the potato trade for the last few years has rendered their cultivation unprofitable, and thus diminished the supply. Large quantities are still raised for the market, but growers have to be contented with greatly diminished prices. Regents and Champions are the principal varieties cultivated; but Red Bogs, Dalmahoyes, Gryfes, Magnums, and Heroes are all grown to some extent in the middle ward of the county. For potatoes the land, in the ordinary green break, is prepared along with and similarly to that for turnips, and also dunged in like manner. But where they are grown after lea, which is a common practice, particularly in the western district, the land is turned in January with the American plough; and after being pulverised by means of the ordinary harrow, it is drilled across the single-plough furrow. Stable manure is generally used for this crop. The earlier varieties are dunged in the drill, but for the later sorts the manure is usually ploughed down in the fall of the year, and supplemented with a few cwts. per acre of nitrogenous manures in spring. Planting is begun as early as possible in April, and is generally finished by the end of the third week. Five bags, or about 20 bushels of seed, generally plant an acre, and if favourably planted the sprouts begin to appear in seven or eight weeks. During these eight weeks the drill harrow is worked amongst the drills, and is again brought into requisition immediately after the plants are hoed. The drills are in many cases twice furrowed up, the first covering being rubbed down by the harrow, and the last made and left intact just before the shaws meet over the drills.

The system known in Ireland as “lazy bedding” was practised in this county some ten or twelve years ago. Patches of rough waste land were “bedded” out into plots, from 4 to 5 feet wide, with a deep trench between them. The dung was spread over the surface of the plot, and the seedlings carelessly laid on and covered with a coating of earth from the trench. When the braird appeared another layer of earth was added. Good crops were thus raised, but the “lazy” system is now given up.

The Regent variety is usually ready for lifting by the middle of August, but Champions and the later sorts are seldom ready before the second week of October. The yield varies very

much, according to the character of the soil and season. In favourable years it ranges from 6 to 10 tons, but from 4 to 5 tons has been no uncommon return of recent years. In 1879 the crop was almost an entire failure on many farms. The county has acquired considerable fame as a nursery of seed potatoes, and a large percentage of the marketable tubers are sold for seeding purposes. The mossland around Paisley is admirably suited for potato culture, and the highest currencies are invariably realised for potatoes grown in this district. The crop is disposed of in various ways. Some farmers sell it by the acre; others by the ton; and a few by smaller measure. A few years ago Regents sold at from £25 to £28 per acre, but current value falls very much short of these figures. From £14 to £18 per acre is now a commoner price, and only in a few cases is the latter sum obtained. Large quantities of seed potatoes are sold by auction in the Paisley district early in spring. The demand is chiefly by Ayrshire growers, who have elevated the "land of Burns" to the first position in Scotland in the matter of potato growing. At the annual sale of seed potatoes on the Fulwood Moss Farm, occupied by the Glasgow Corporation, last year, the average price obtained was £4, 11s. 10d. per ton over all, the early varieties averaging £6, 2s. 10d., and the later sorts £2, 16s. 4d. The extremes were £7, 10s. for a lot of "Dons," and £2 for Magnum Bonums. The average price of the several varieties was as follows:—Don, £7, 2s. 1d.; Goodrich, £6, 9s. 6d.; Red Bog, £6, 0s. 10d.; Dalmahoy, £5, 18s.; Gryffe Castle (early), £4, 18s. 4d.; Kirk's Regent, £3, 8s. 3d.; Hero, £2, 6s.; and Magnums, £2, 2s. 8d. per ton.

The following is an interesting account of the method adopted of preparing early potatoes for the market by one of the oldest farmers in the county:—In order to give the potato every chance to be ready for the earliest markets the seed is started in boxes 30 inches long, 21 inches wide, and 3 inches deep, with corner posts 6 inches long, having a rail across. The rails across the top of the corner posts act as handles to the boxes when they are placed one on another. The boxes have a free circulation of air through them. The manner of boxing is as follows:—The "seconds" or "middlings" of the kind selected are dressed by an inch-and-a-quarter riddle, and if ripe are put into the boxes when dug, say in September or October. If the seconds of the early grown ones are taken, they are put into thin pits and covered with straw to allow them to ripen, and are then put into boxes, say in September. The boxes are filled with potatoes only, and are put on the top of one another in a place where there is no danger of frosts, and where they may have a little heat, if necessary, in winter. As a rule there is more difficulty in keeping back the shoots than otherwise,

and if the potatoes are kept moderately warm and sprung about half or three-quarters of an inch about 1st February, and then put into a cool place to harden before being planted, they are all the better. With regard to the manures used, dung or seaweed is generally applied on the top and ploughed in with a thin furrow in autumn, and if on lea (which is always preferable for growing early potatoes), it is better to be put on as early as possible to wash into the grass. It is considered scarcely practicable to grow potatoes on lea for any length of time without heavy manure, unless a great deal of feeding stuff is consumed on the grass. Generally speaking, where land is used principally for growing potatoes, it is two years under potatoes, dung, if possible, being applied in one of the two years, and two years' grass sown out after potatoes. As to planting, with boxed potatoes this should not be done too early, say the second week of March. The drills ought to be made 26 inches wide, as it is important that potatoes for early use should be planted in shallow drills and covered deep after planting. In this way a week of difference in raising may be made. The boxes with potatoes are taken to the field and planted out, two planters taking one box. Peruvian guano of good quality is the best manure for early potatoes, but it cannot always be relied upon. Latterly a compound manure made up of phosphate guano and guano along with sulphate of ammonia and sulphate of potash has been found the most beneficial. This is applied at the rate of 8 to 12 cwts. per imperial acre, according to the quantity of heavy manure applied, and costs at present about £9 per ton. The great object of course is to have the crop as early as possible in the market, and if this can be managed a good price is obtainable even at present.

Cabbages.—These have nearly trebled in extent since 1860, being raised for the use of dairy cattle in the months of October and November. They are reckoned of much importance as milk-producing food. Round about Paisley and Glasgow, however, where they are most extensively grown, they are sold to greengrocers in the respective towns. The soil of the upper ward of the county is admirably adapted for the cultivation of cabbages, and on several farms they gave a better return than turnips. When carefully pitted on the land, they can be preserved for a considerable length of time.

Rape.—Rape is grown to a very limited extent. On their home farms, Sir Michael Shaw Stewart, Bart., and Lord Blantyre, sow it along with grass seeds; and after it attains a considerable height it is consumed by sheep.

Vetches.—This is purely a "catch" crop. It is grown for use in the end of harvest, when stock are being taken off the pastures. It is very useful, but has been steadily decreasing since

1870—a fact due to the more liberal feeding with semi-ripe cereals, hay, and cabbages.

Mangolds.—These are less popular than they were some thirty years ago. Only some 40 acres are now grown. They thrive best on soil deposited by brackish water, and their growth is thus entirely confined to the better class land on the bank of the Clyde. Their manurial and other treatment resembles that of turnips, almost the only difference being the application of pure salt, the presence of which is indispensable for their successful cultivation.

Carrots.—These are chiefly the production of market gardeners, but they are also used for feeding horses. They are supplied raw along with oats, and are much relished by the animals. The soil is not particularly well adapted for the growth of carrots.

Flax.—About the beginning of the century flax was grown on a good many farms. It was very exhausting on the soil, and after it became so largely imported from Russia and foreign countries, it died out about 1860, or perhaps a little later. In 1856 fully 16 acres were devoted to its growth, but only half that acreage was planted in 1857.

Cattle.

Ayrshire cattle have long dominated the county of Renfrew. Attention appears to have been directed to their improvement as early as the Reformation; and towards the end of last century they were supposed to have reached an eminent degree of perfection. Tradition asserts that the cow which founded the Patons' famous herd at Swinlees, Ayrshire—probably the most noted herd of the breed in the eighteenth century—was bred in the parish of Kilmalcolm. Be this as it may, there can be no doubt as to the progress of the breed during the past half century. Some well-informed breeders believe that more good animals have, within that time, been bred in Renfrewshire than in all the other Scotch counties put together. The Messrs Kerr, Barrodder; Reid, Auchengowan, Robertson, Caldwell; Holm, Jaapston; Harvey, Cairn; Gillespie, Boylestone; Pollock, Blackhouse; Paton, Bankhead; Wilson, Forehouse; Lang, Kilbride; Bartlemore, Lochwinnoch; and Sir Michael R. Shaw Stewart, are entitled to rank well forward among the improvers of the breed. Their names were familiar wherever Ayrshire cattle were shown, and most of them are familiar still. Mr John Reid, late of Auchengowan, bred many very fine animals, mostly of Swinlees blood, and exhibited them far and near with much success. After his death the herd was managed by his son John Reid, who was secretary of the Lochwinnoch and Johnstone Agricultural Societies. Mr John Reid,

however, died a few years ago, and consequently the herd had to be brought to the hammer—a fact which, in view of its excellence and prosperity, occasioned widespread regret among fanciers of the breed.

Probably the oldest strain of Ayrshire blood in the county is to be found in the herd of Mr Wilson, Boghall, Houston. This family of Wilsons has, for a very long time, been associated with the progress of the breed, the ancestors of the present tenant of Boghall having for generations taken an active interest in its welfare.

The herd of Mr Holm, Jaapston, though established comparatively recently, has, by skilful management, been brought into prominence. For many years it has been successfully represented at all the leading exhibitions in the West of Scotland. Mr Holm's "Bright Smile" (1307), which won the Ayrshire Cattle Herd Book Prize as the best cow in 1882, is probably one of the finest female specimens of the breed on record. Her progeny are likely to prove of inestimable value to the improvers of the breed. She is the dam of Mr Holm's present stud bull, whose services are being widely patronised by more breeders than his owner.

Sir M. R. Shaw Stewart is one of the most successful breeders and exhibitors of Ayrshire cattle in Scotland. At the county show, and elsewhere, he takes a foremost place in the prize lists, which he well deserves to do. He is a liberal supporter of the Renfrewshire Show financially, and an enthusiastic and judicious breeder and buyer of stock. His success beyond the county is exceedingly creditable. At the Edinburgh Highland and Agricultural Show in 1869, and again at the Kelso Highland Show in 1872, he carried, in addition to numerous other honours, the first prize for aged bulls of the Ayrshire breed, his Kelso winner being an animal which was bred in Renfrewshire. Sir Michael has also won distinguished prizes in the national showyards of recent years, especially for heifers.

The herd of Mr Robert Gillespie, Boyleston, though not a very old one, is not unknown to fame. At the Highland Show at Glasgow in 1875 with "Scottish Chief," and at Aberdeen in 1876 with "Cardigan," he won first honours in the bull classes, and he has bred many good animals since.

But, making due allowance for the enterprise and success of the breeders we have mentioned, no name, perhaps, is more closely bound up with the history and progress of the breed than that of Mr Wilson.

Mr James Wilson bred a handsome bull, which headed the aged class at the Highland and Agricultural Society's Show at Glasgow as early as 1838; while Mr Alexander Wilson of Forehouse, Kilbarchan, was an eminent and very successful breeder

and owner of Ayrshires. The latter gentleman has been worthily succeeded by his son, Mr Robert Wilson, who recently transferred the old Forehouse herd to Manswrae, and still follows, with admirable skill and success, the track of his predecessors. As an exhibitor, Mr Robert Wilson made a very promising start in 1869 by winning two prizes at the Highland and Agricultural Society's Show at Glasgow. One of his winners was "General Grant," a bull which did noble service in raising the character of the breed; the other was his "Mearns" cow, which afterwards proved so valuable. To the service of "General Grant" in the Glasgow showyard she produced in due course a bull calf, which passed into the hands of Mr James Wilson, Boghall, and rejoicing in the name of "President." He followed the footsteps of his celebrated sire by heading the aged bull class at the Perth Highland and Agricultural Show in 1871. The "Mearns" cow was first prize winner when in milk at Aberdeen Highland Show in 1868, and was regarded as one of the best females of her day. She was bred by Mr Robert Harvie, Cairn, Mearns, and won numerous first prizes other than those already mentioned, while her excellence as a breeder was oftener than once attested. Previous to the "President," the Perth Show hero, she bore "Edina," which, as an aged bull, carried leading honours at Ayr and Glasgow open shows while in Mr Wilson's possession.

In addition to the triumphs we have enumerated, he headed the aged Ayrshire bull class at the Dumfries Highland Show in 1870 with "Lord Raglan" (446), bred by Mr George Bartlemore, then tenant of Auchensale, Kilbarchan. Again, at the great Centenary Show of the Highland and Agricultural Society at Edinburgh in 1884 he gained the first prize for the family group of Ayrshires, all bred by himself. He headed the lists of the York Show of the Royal Agricultural Society of England in 1883, and the Preston Royal of 1885; and this autumn (1886) he secured considerable distinction at the London Dairy Show. Mr Wilson, though still breeding Ayrshires and farming in the parish of Kilbarchan, some years ago established an auction mart for Ayrshire dairy cattle at Paisley, which has become one of the most important and successful of its kind in the west of Scotland.

Few people have done more to vindicate the honours of this very excellent dairy breed than the Lochwinnoch Bartlemore family. One member after another distinguished himself in the breeding of Ayrshires, and the present Mr William Bartlemore, to whose fine herd we previously adverted, seems determined to uphold his ancestral reputation. With "Baron o' Buchlyvie" (281) he won the first prize in the aged bull class at the Stirling Highland Show in 1881; while, for the same

animal, he secured the special prize awarded at Ayr the following year for the best "Herd Book" bull. "Baron o' Buchlyvie" achieved a still greater victory in 1883. In that year he championed the breed at the Royal English Agricultural Show, and established for himself a name whose connection is, and will doubtless continue to be, much coveted by breeders. During a showyard career of unbroken success, he was freely used in Renfrewshire, and left a large number of fine cattle in the county. No later than the first of the present month (October 1886) one of his grandsons secured for Mr Bartlemore the medal at the London Dairy Show. But these are only two of the many animals brought out by Mr Bartlemore of recent years. In 1884 this celebrated exhibitor carried first honours and the special prize offered for the best bull, at Ayr, with "Royal Star" (682), which was extensively used by farmers in the Lochwinnoch parish. In the same year, and in a still wider field—at the Edinburgh Centenary Show, the most memorable of its kind in Scottish agriculture—the invincible "Silver King," a fine specimen of the Ayrshire breed, won for Mr Bartlemore, in addition to class honours, the special prize offered for the best Ayrshire bull. Again, in the autumn of 1884 this finely-shaped animal, after a severe struggle with Mr Walter's royal champion bull "Young English Gentleman," bore the palm at the London Dairy Show,—a victory of which his breeder may well be proud. Last year "Hover a Blink," the sire of Silver King, carried the Herd Book prize at Ayr, and headed his classes both at the Royal English and the Highland and Agricultural Society's shows at Preston and at Aberdeen respectively. This bull did good service in the county, and his progeny are very excellent and promising. At the Ayrshire Show last spring (1886), for example, all the leading young bulls were sired by him.

Before referring to the breeding and management of the ordinary commercial cattle, it may be of interest to give some indication as to the number of cattle of different ages kept in the county. This is furnished by the following table:—

Year.	Cows and Heifers in Milk and in Calf.	Two years old and upwards.	Under two years old.	Total.
1857	11,533	7779	3086	22,398
1870	13,479	3949	5847	23,275
1875	14,883	4228	6686	25,797
1881	15,333	3615	6101	25,049
1885	16,131	4202	7286	27,619

The only explanation necessary in connection with these figures—which tell their own tale—is that in 1857 only calves were enumerated in the class under two years of age. This accounts for the discrepancy shown in the numbers of cattle other than cows and heifers; but the first class and total numbers of that year are perfectly comparable. The breeding of stock is not an important branch of farming in this county. That is to say, it is not so widely adopted as might be expected; but over the higher and more inland parts a good many animals are annually reared. Most farmers breed a few every year, chiefly for keeping up their dairy stocks. A good number, however, prefer buying in the necessary stock, it being a consideration of some moment to get the cows as near one age as possible. In the Mearns and one or two other parishes breeding was at one time more extensively carried on than it has been of recent years. The development of the sweet milk trade curtailed breeding very much, and with the extremely low value of cattle since 1884 there has been little encouragement for its extension. The system of management has altered not a little since 1860. That it has improved is testified both by the amount of feeding stuff consumed, and the enhanced quality of the stock, which are as a rule well-bred and fashionable. The young stock are now served earlier than they used to be. This change was introduced some twelve or thirteen years ago, with great advantage. Previously surplus heifers were sold in the month of April, due to calve when three years old. Now they are mated so as to produce their first calf some six months earlier. They are thus largely sold off in December, which effects a saving of “keep” to the exposor. As to whether or not breeding might take a more prominent place in the economy of the county there is much difference of opinion; but were prices to rise to remunerative rates, we think this branch of farming should merit increased attention. The Ayrshire is really the only regular breed kept, but cross-bred cattle are bought in and fattened on several farms. These are usually brought from the north of Scotland and Ireland. Northern Scotch bullocks are found to answer the graziers’ purpose very well, better perhaps than Irish; still there is a fairly good demand for the latter sort. Some graziers buy in cattle from the Western Islands, which also thrive very well on Renfrewshire pastures. The bullocks are mainly fattened on the grass, and comparatively few are carried through the winter.

Dairy Farming.

The number of cows kept for dairy purposes is well nigh two-thirds of the whole cattle of the county. In this respect Ren-

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frewshire ranks seventh among the ten dairy counties in Scotland, while it stands third in regard to the number of cows devoted to the production of milk, fourth in the number kept for butter, and seventh for cheese. Some 8700 cows are estimated to be kept solely for milk, 5400 for butter, and about 200 for cheese. The annual death-rate as a rule is high, but the mortality in seven of the other ten dairy counties is still greater—the average over the ten being 3·68, and the average of Scotland 3·49.

The dairies kept on the arable farms are either for the production of milk to be sold fresh or sweet, or for butter, and in a few cases for both. Most of those near Glasgow and Paisley, or the collieries between Johnstone and Paisley, sell their milk sweet, while those farther upland make butter. On this class of farms, under either system of dairying, few farmers raise as many young cows as supply themselves; in fact, many rear none at all, each relying on the supply of cows at all times furnished by the periodical fairs at Paisley, Renfrew, and Rutherglen, the weekly markets at Glasgow, and the Paisley auction mart, where calving stock are sold every Monday. The markets are largely supplied with cows calved or near the calving, not only from the higher lands of the county, but chiefly from the more distant rearing districts, such as Ayr, Argyle, and Lanark, so that there never is any difficulty in obtaining the number of cows required. In this district the feeding is generally very heavy, in many cases being only limited by the powers of digestion in the animals, and although by this system the losses are acknowledged to be great, it is still considered the most profitable. In order to keep up a more or less regular supply of milk all the year over, cows must be had to calve periodically from the one end of the year to the other, requiring a much larger number to be kept than are actually in milk. The cropping arrangements and fences of many of the farms do not admit of these being kept at home during summer; while in winter, owing to the value of straw for selling, and the scarcity of housing, there is also a difficulty in accommodating a large number of yeld cows. The keeping of these has, in consequence, almost entirely been thrown on the hands of dealers and graziers, who buy them in the spring and summer them on outside pastures, bringing them near the date of their calving to be sold at the most convenient fair or market. The profit of dairying under this system is very much regulated by the skill with which the cows are managed, and the cows originally bought or sold, and how the produce is disposed of. In winter they are largely fed on artificial foods, which consist principally of bean or pea meal, draff, Paisley meal, maize meal, bran, &c., in addition to the usual quantities of hay, straw, and roots grown

on the farm; while in summer they get grass, with more or less of these added. Linseed cake is not very extensively used, and cotton cake is much less so, the latter, owing to its concentrated and indigestible nature, being not well liked. Food of this class is generally given cooked and warm, mixed with chaff or cut hay or straw, and boiled roots. The heavy land of a great portion of this district suits badly for the growth of roots, the small supply of which, during winter, makes the feeding of dairy cows a matter of difficulty. Indeed, without succulent food of some kind or other, such can scarcely be successfully done. It is here that skill in management comes in, for while one person will see and know at a glance when his cows are having as much of any particular kind of food as they can safely use, another will neither see nor know when they have got enough, or even more than enough, so that serious loss is often the result, when, as often as not, something other than the real cause is blamed for it. It is this constant personal attention which makes dairying (no matter of what kind) so irksome, as there always appears to be a difficulty in getting hired labour to carry out conscientiously the minute details of milking and feeding which the system requires. On a very few farms silage has been tried with fair success, but, as yet, silos have only been introduced to a small extent. The system, however, is capable of being very largely extended, and we think few districts in Scotland are more suitable for its success. The climate is moderately early; manure, owing to the proximity of Glasgow, is cheap, and easily obtained. Hay is one of the largest crops grown in the county, and the district is fully as wet as the average of Scotland, so that the making of a second crop of hay is almost an impossibility, owing to the fogs to which the lowlands of the Clyde are liable every autumn. As far as we can see, there is therefore no reason why preparations should not be made for raising as large a second crop of hay as possible, and all, or the greater portion of it (if not more or less of the first crop) stored in silos for the use of the cows in winter. It is quite true, good crops of second cut hay cannot always be obtained, even by the use of fertilisers, of which the present year is a notable example, but neither can crops of turnips or other roots always be depended on, even where more labour and manure are expended on them than is done on the second crop of hay.

The milk produced, when sold sweet, is either carted direct, immediately after the morning's milking, to a retailer in one of the populous centres, or is sold in the street from the farmer's cart. The smaller class of farmers generally sell their milk themselves, when they can do so personally; but where such has to be done by a stranger, success has not always attended the venture. On those farms where butter is made, it is either

distributed among a number of grocers, who retail it; or if the butter-milk is sold by the farmer from his cart, he generally retails his butter also direct to the consumer.

It is, however, on the second-class lands of the county, viz. those without the 6 or 7 mile radius from Renfrew, that the dairying of the county attains its maximum. Here the farms more favourably situated for retailing the milk, or sending it by rail, sell sweet milk; while those further inland make butter, and either sell or consume, by pigs, the butter-milk; while those furthest away from the towns make cheese. One or two farms in this locality are devoted to the summer feeding of cattle, but they are only a few. Nearly all rear as many stock as supply their own wants, and a few breed more. Winter dairying is not practised so extensively as it is lower down, the summer pasture being principally depended on for the produce of the dairy. This pasture, however, is all of the very finest class possible, which, owing to the nature of the soil and underlying rocks and dripping climate, always is of a deep green colour. All summer the whole country side presents a fresh green appearance, to be met with, perhaps, in no other county in Scotland, unless in North Ayrshire.

In the western district, dairying, although the principal industry of the farm, takes a different phase from that of the central or eastern part of the county. The principal demand for milk is for the supply of the summer visitors at Wemyss Bay, Inverkip, and Gourock, and as the demand is almost *nil* during winter, there is little or no winter dairying. The cows in consequence get a long rest in winter, and after calving in spring, they are put out to the pasture, so that they are reared and fed in a very natural manner. As there is not much demand for milk early in spring, the calves get a good supply, which gives them a fair start in life, and this constitutes the district a valuable rearing one. Cows in this parish—Inverkip—probably yield as much value in a year as in the finer grazing parishes of Kilbarchan and Mearns, because the milk here is most valuable when it is most plentiful; whereas in the others it is the reverse. As a grazing district it is, however, not to be compared to any of the other parishes along the southern border of the county. The best dairying parish is probably Mearns, than which there are few better. It, with the other grazing parishes of Eaglesham, Neilston, Lochwinnoch, part of Kilbarchan, Houston, and Erskine, and all Kilmalcolm, have, as already stated, a fair depth of soil lying on the trap rock; and a climate admirably suited to the growth of grass. The butter made in these parishes generally is sold into the villages between them and Glasgow, the latter, as is to be expected, getting the bulk of the produce, which is either supplied by the farmers to shops, or from their

carts to the public. This locality has for a very long time been famous for its production of butter; and certainly few districts are more favourably situated for this than the parishes of Mearns and Eaglesham. The climate is if anything a little late, but the rainfall and soil are all that could be desired, and the thick green sward which the whole county usually presents, bears ample testimony to the fact that the people of these parishes have adopted the system of farming best suited to the locality. The quantity and quality of butter produced are always up to a high standard of excellence, if the requisite skill in its manufacture has been exercised; while the class of cows reared is generally good, both for size and milking capabilities. Districts which, on the ordinary produce of the soil, can without any undue amount of hand feeding rear a large animal, are generally set down as being more than average in fertility, and to this class belong Mearns and the surrounding district. Winter dairying is not practised so extensively as lower down, and consequently less artificial foods are required. If grass is anything like plentiful, little or no hand feeding is given in summer; while in spring, autumn, and winter it is principally confined to bean and pea meal, with a small quantity of Indian meal, Paisley meal, and linseed cake. Draff is very little used in the butter dairies, as its use almost invariably causes the butter to be of a very pale colour, and bad quality.

From Lochwinnoch, down through Kilbarchan and Kilmalcolm to Port-Glasgow, the same system of dairying is pursued as is practised in the Mearns and Eaglesham district, with, however, a little more cropping on at least the lower farms. As Port-Glasgow and Greenock are near, however, butter dairying gives place to the sale of sweet milk, the demand for which in both places is always good. This demand is considerably increased by the limited area from which the supply is available, the sea taking up one side, while the hills approach very near to the town on the other. Both Port-Glasgow and Greenock draw a good quantity of their milk supply by rail from Ayrshire and even Wigtownshire, without which the towns would be anything but well supplied. On the farms furthest inland, where the butter milk can only be sold at great expense, a large portion of it is used in pig feeding and calf rearing, for which it is well suited, when judiciously mixed with some concentrated food.

The butter instructor of the Ayrshire Agricultural Association visited the lower part of the county in 1884, and gave several demonstrations of his skill; but with that exception little has been done for the improvement of the industry, other than what is provided by the annual competitions at the local cattle and other shows.

A few farms on the extreme southern boundary of the county make small quantities of cheese, but this industry is not in favour amongst Renfrewshire farmers.

As already stated, the larger portion of the products of the dairy are sold as milk in one or other of its different forms, sweet or fresh milk being probably in larger quantity than any other. With few exceptions, all the sweet milk is delivered to the consumer or retailer by the farmer's cart, it being only on the southernmost part of the county that a very few farmers send in their milk by rail, Lochwinnoch probably sending as much as all other places together. Delivered wholesale by the farmer's cart at from 5.30 to 6.15 A.M., this milk realises an average from 8d. to 9d. per gallon all the year round, where a fair quantity is kept up during the winter. In summer little of this class of milk is sold under 6½d. per gallon, and at its dearest, contracts cannot now be made over 10d. per gallon. If delivered by rail it comes in later in the day; and when the supply is larger and the demand smaller, prices recede considerably. So much so is this the case that in many instances "railway" milk is bought at from 1d. to 1½d. or even 2d. per gallon less than the same quantity of milk delivered early in the morning. Some farmers' carts come a long way, 10 and 12 miles being no uncommon distance, but 7 miles may be regarded as the average of the sweet milk trade. The cost of carting milk such a distance is a much heavier item than most farmers are aware of, and must run from ¾d. to 1d. per gallon for delivering. The work also must be attended to on Sunday and Saturday, summer and winter, in sickness and health; and where any quantity of milk has to be delivered, two horses must be kept, so that the one may take the place of the other in case of accident. Many farmers retail their milk direct from the cart to the consumers; while others sell it in gallons and larger quantities to the smaller milk shops. Delivered to the smaller milk shops, the prices realised run from 10 to 20 per cent. over that given by the wholesale dealer. The trouble is, however, a great deal more and the risk something excessive, so that unless where a farmer is personally selling his own milk few can make it pay. The retail prices of milk in Glasgow, Paisley, and Greenock may be reckoned as from 10d. to 1s. per gallon in summer, and from 1s. to 1s. 4d. in winter. These profits seem heavy, but it does not appear that the trade can be successfully carried on for much less, as it is the fewest number who succeed. Around Wemyss Bay and Inverkip the price realised for sweet milk during both summer and winter is considerably more than in any other part of the county. The difference between the midsummer and midwinter supplies is very little; prices may be quoted at from 1s. 2d. to 1s. 4d. per gallon retail all the year over.

In the butter-making districts of the county, where easy access can be had to Glasgow, Paisley, Greenock, or other populous centres, the butter milk is in many cases carted there and retailed from the cart at about 1d. per gallon, or sold in cart or van loads to bakers at from $\frac{3}{4}$ d. to 1d. per gallon. Butter milk fed to calves or pigs at home is not calculated to be worth over $\frac{3}{4}$ d. per gallon. The butter made in the county is all sold fresh, and is either used locally or sent to Glasgow. Last summer's price would run from 10d. to 1s. 1d. per lb.; and last winter from 1s. 1d. to 1s. 4d. These prices are considerably below those current a few years ago, when 1s. 4d. in summer and 1s. 6d. to 1s. 8d. in winter was the common price.

The little cheese made on the extreme outside of the county generally also meets a local sale, its present worth being from 45s. to 55s. per cwt. with the whey from each cow, valued at about £1.

Horses.

A well-earned fame has long attached to Renfrewshire for her enterprise in breeding horses. The stock kept for agricultural purposes are purely Clydesdales, and so intimately associated has she become with this justly celebrated breed, and so prominent a part has she played in its promotion, that a history of her doings in this department is practically the history of Clydesdale horse-breeding. Be this as it may, this county has produced more enthusiastic breeders, perhaps, than any other in the kingdom, and many of the largest and best known stock-raisers and owners the trade has ever boasted have resided in Renfrewshire. In attempting to describe her attainments in Clydesdale horse-breeding we are first made familiar with the name of William Fulton, Sproulston, in Lochwinnoch, who bred and reared "Clyde" *alias* "Glancer" (153), popularly known as the ruptured horse, "Rob Roy" (714), and many other horses which attained distinction as sires; and next with that of John Barr, Barrangry, Erskine, who owned "Prince Royal" (647), "General Williams" (326), "Jack's the Lad" (400), and "Garibaldi" (312)—all of which were well known and valuable stud horses.

The name of Andrew Logan, Crowflats, Kilbarchan, is inseparable from the annals of the breed. Mr Logan bred and owned many distinguished horses, including the invincible "Samson" (741), which left a deeper impression in the county than any other animal on record. The Keir stud is still largely composed of "Samson" blood; while he was the grandsire of the 900 guinea twenty-years-old horse "Prince of Wales" (673) and the renowned champion "Darnley" (222), whose death has just been announced in his fifteenth year. Besides breeding

"Samson," which, by the way, was also half-brother to "Lord Clyde" (477), which left such an excellent impression in Kinross-shire, Mr Logan owned some notable mares. Prominent amongst these was a daughter of "Prince Royal" (647), bred by Mr Kinloch, Kilmalcolm, which acquired celebrity for her show-yard achievements. The late Samuel Clark, Manswraes, Kilbarchan, was a very successful and prominent exhibitor of entire horses. For many years he was recognised as chieftain of the trade, and a descriptive list of the horses he possessed would make a lengthy history of itself. One of the finest animals ever owned by him was "Clyde" (155), which won the first prize at the Highland and Agricultural Society's Show at Glasgow in 1844. This horse proved an impressive sire, and many of his good qualities are still traceable in Wigtownshire and elsewhere. He also owned "Lofty" (455), the Kintyre-bred sire of "Samson" (741), the sire of "Lofty" being the well-known "Farmer's Fancy" (298), which was bred in Renfrewshire and afterwards used in Kintyre. Among the others owned by Mr Clark was the Renfrew bred stallion "Young Lofty" (989), which gained the Glasgow Agricultural Association premium in 1866, and again in 1867, and was thereafter transported to Derbyshire, where he became the sire of several of those showyard heroines which the late Lawrence Drew purchased. Horses belonging to Mr Clark may be said to have at sometime or other travelled the whole length and breadth of Scotland, as well as a portion of England. He was an enthusiast in selecting, and knew his business well. He frequently acted as a judge at leading agricultural shows; his last appearance in a judicial capacity was at the Inverness Highland Show in 1874, where met in combat the meritorious "Pride of Scotland" (602) and the renowned "Royal Prince" (732). Mr Clark died in 1877.

Another name deserving of honourable mention in this connection is that of Foster King, Longhaugh, Erskine. He bred and owned "Prince of Wales" (666), a horse of excellent reputation in many important stock-breeding districts—particularly in the upper and middle wards of Lanarkshire. Other Clydesdale enthusiasts we find rejoicing in the name of Park. To men versed in Clydesdale lore there has been, and ever will be, a familiar ring in the name of Glenshinnoch; while Hatton has made a bold effort to drown its chime. The father of the present respected tenant of Glenshinnoch, in the parish of Erskine, was an energetic breeder of Clydesdales; the present Mr Park follows suit; and younger generations of the family, which are creditably represented by William Park, formerly of Gallowhill, Paisley; James Park of Deckmont, Cambuslang; and Walter S. Park, Hatton, have successfully upheld their

ancestral name. The Hatton stud is one of the best in Scotland at the present time. The mares in it are, without exception, of the fine old Clydesdale type, and include the dam of "Lord Erskine" (1744), which was bred here. This horse is one of the best animals the county has produced, being alike famous for his showyard success and breeding properties.

Some thirteen years ago David Riddell, an enterprising breeder of and dealer in Clydesdales, became tenant of the farm of Blackhall, near Paisley, and it has since been the home of an excellent stud of entire horses. The distinctive features of the stud are its wealth in "Prince of Wales" and "Darnley" blood, which is very highly appreciated and prized where known or tried. It may be mentioned that the most successful sires at the nine largest shows of 1886 at which Clydesdales were exhibited were those of the same tribe as the late "Darnley." The grand old horse himself had more prize animals and more first prize animals in the field than any other sire. Eighteen of his sons and one grandson were amongst the most successful sires of prize stock, and only one of the nineteen was out of a mare believed to be from the south.

"Keir Peggy" (187), the favourite mare of the late Sir William Stirling-Maxwell, Bart., was bred by the late Hugh Whyte, Barnbrock, Kilbarchan. She has distinguished herself in showyard and stud, and as the dam of the far-famed "Darnley" and several other well-known animals we could mention, she may justly be regarded as one of the most valuable mares ever reared in the west of Scotland.

Sir Michael R. Shaw Stewart, Bart., has within the past five years helped liberally to improve the breed of horses in the lower ward of Renfrewshire. In addition to the familiar "Top Gallant" (1850), which he keeps for use in the district, he gives a handsome premium frequently for the services of a high class horse for breeding purposes among his tenants. As the winner of this premium the fine stallion "Sanquhar" (2393) travelled the district for two years with highly gratifying results.

Amongst the parishes of the county, Kilmalcolm probably bears the palm as regards horse-breeding. It has an annual show of its own, which for Clydesdale merit would surpass many county exhibitions in Scotland. Most of the farmers in the district are conversant with the characteristics of the breed, and a healthy rivalry exists amongst them in the matter of stock-breeding. The most successful breeders are unquestionably the Messrs Love, Margaret's Mill and Jordanshaw. They are zealous in their endeavours to improve the breed, and have displayed praiseworthy foresight and discretion in disposing of their stock. Their mares are all of high merit, and the sires represented in their stud are principally "Prince of

Wales" (666), "Prince of Wales" (673), and "Pride of Scotland" (602). Mention of the last-named stallion recalls the name of one who, though only a short time in the trade, owned many fine horses. We refer to the late Robert Brewster, Branchall, Kilmalcolm. Almost every large exhibition gives fresh evidence of the sound judgment he exercised in selecting his horses. Three of the first prize-winners at the memorable centenary show of the Highland and Agricultural Society at Edinburgh in 1884, for example, were out of mares whose sire—"Prince Charlie" (629)—was first owned by him. "Prince Charlie" was also the sire of the dam of Andrew Montgomery's "Macgregor" (1487), as well as many other famous horses. Among the other notable horses that passed through Mr Brewster's hands were "Young Garibaldi" (972), "Marquis" (517), "Surprise" (845), "Duke of Dalry," and last, but not least, the renowned "Pride of Scotland" (602).

Turning from the lower to the upper ward of the county we are reminded of the numerous animals of note bred in the Neilston and adjacent parishes by the Knox brothers. It was by Mr Knox of Forside that the dams of "Old Times" (579), "Prince of Wales" (673), and "St Lawrence" (3220) were bred; while the tenant of Malletsheugh, Newton Mearns, a relative of the family, bred the reputed stallion "Dunmore Prince Charlie" (634). Newton Mearns was for many years the home of Mr Pollock's "Young Lord Lyon" (994), one of the finest stallions ever bred in Scotland, and the same stud has produced several notable prize-winning mares and horses. In the parish of Eaglesham horse-breeding is also engaged in to a considerable extent. One of the leading breeders here is Mr Allan Inches, who is the breeder of several very good horses. Of these "Prince Alfred" (619) forms a capital illustration. He gained the first prize at Glasgow when three years old, and won the Paisley district premium, which, as we have observed in our history of the Renfrewshire Agricultural Society, is now defunct. The premium given in the lower ward is therefore the only one now awarded in the county.

In the district of the county lying around the burgh of Renfrew horse-breeding absorbs a great deal of attention, while the town itself has become intimately connected with the trade. From Mr Ferguson's stables, which are within the burgh, a large number of horses have been exported to America and Australia during the last six years. Mr Macdonald, Porterfield, has earned considerable distinction in owning and exhibiting Clydesdale stock, as have also Mr Keter, Bogside; Mr Lang, Garneyland; and Mr Taylor, Park Mains. The last-named gentleman has exported to America some very valuable animals, and is still in possession of a few excellent mares and fillies.

One of his latest transactions was the sale of the beautiful three-year-old stallion "Lord Beresford," which stood in the short leet of seven at the Glasgow Stallion Show last spring. The price obtained for him was 400 guineas, from an American buyer, which, with one or two exceptions, is the highest figure realised for any single Clydesdale animal yet exported.

Such is a brief and necessarily very general sketch of a great and growing industry. Fully to exhaust the interesting subject would occupy more time and space than are now available. We have said enough to show that Renfrewshire is entitled to a leading position in breeding Clydesdale horses. And in Scotland, where so many counties vie with each other for pre-eminence and honour, this is no mean distinction. That a small western shire should hold its own in a race with its larger and more richly agricultural neighbours, is a fact of which its inhabitants may well be proud. The extension of the breed into other parts of the county, as well as into other counties, has in no way weakened the trade of the native valley of the breed, which is as largely carried on as ever, and Renfrewshire annually exports a larger number of horses in proportion to its size, perhaps, than any other county in Scotland.

The general opinion among the landowners and farmers is that the ordinary farm work horses of the county have improved considerably during the past twenty-five years. While that is so, however, it should be remembered that the maximum measure of success has not been attained in every district. The extension of permanent pasture, and the development of dairy farming, has impeded improvement in some parts. The sires used also, in some cases, have been productive of unsatisfactory results, which is a subject of complaint with a few farmers. This they attribute to over-feeding, and arrive at the conclusion that the grievance might be remedied, and a healthier and hardier race of stock raised, if the stallions used were more moderately fed. We think, however, there is not much room for complaint on this score; and that the horse-breeding industry of the county, as a rule, is carried on with commendable discretion, enterprise, and skill. The number of horses in the county at various times since 1870 was as follows:—

	1870.	1875.	1881.	1885.
Used solely for Agricultural purposes,	2133	2190	2300	2336
Unbroken and Breeding Stock, . . .	578	904	1034	960
Total,	2711	3094	3334	3296

The total number in 1857 was 3635, of which 2352 were kept solely for agricultural purposes, and 779 were under three years' old, but intended for agricultural work.

Sheep Farming.

The progress of the past twenty-five years in sheep farming has been enormous. We are informed by some of the oldest agriculturists in the county that this industry remained utterly neglected until within the past quarter of a century. Since then, however, greater care and earnestness to improve the stock have, in a large measure, had the desired effect. But it is questionable if the average farmer has even yet learnt to appreciate the finer points in the breeding of sheep. Most of them are contented with size and substance in sheep, and with exception of some half a dozen breeders, all seem to underestimate the value of high-class breeding. If this system were more generally adopted, we feel assured that the sheep stocks of Renfrewshire could be raised to a foremost position. As it is, they compare favourably with the ordinary commercial stock of other counties; but this is not the standard by which farmers can estimate their own success. A western sheep farmer, whose advice we consulted on this matter, is right when he says:—"Until quite recently but little attention has been paid to sheep breeding in Renfrewshire (with one or two exceptions). Formerly prices were remunerative for any kind of mutton, but now that they have fallen so far, it is only by the breeding of really good stock that profit can be made."

The principal sheep farms lie at either end of the county, east and west. They carry flocks varying in size from 400 sheep up to 2,000. The average flock may be estimated at 500. They consist almost wholly of breeding sheep, and the improvement effected during the past twenty-five years is mainly due to the judicious selection of tups. The rams used are generally short, thick, well-ribbed sheep of the west of Scotland type. East of Scotland tups are found to be too lengthy in carcase, and thin in wool, to withstand the severe climate of the higher districts of Renfrewshire. Farmers breed a good many tups themselves, and they are thus able to some extent to "mould" the type best suited for the district. The rams are put to the ewe stock about the 24th of November, and each tup is allowed about 50 ewes. They are withdrawn about the first of the year, and fed largely on artificial food, such as Indian corn, ground pease, and oil cake. The lambing season is one of great anxiety both to owners and shepherds. It begins about the middle of April, and usually lasts about three weeks. Lambs are castrated about the 15th of May, when they are

marked, as a rule, for the first time. They are weaned in the second or third week of August, when the crop is usually in the proportion of 35 lambs to every 40 ewes.

Eild sheep are clipped in the end of June, and the milk ewes about the middle of July. The average yield of wool is about 4½ lbs. Dipping operations take place at various times. Most of the stocks are dipped only once a year—in October or November; but, in one or two cases, sheep are twice washed. Mr Moffat, Gateside, Dumfriesshire, who farms extensively in the western district of Renfrewshire, dips his sheep in August and again in January. The dip he uses is of his own composition, and costs from 2s. to 2s. 6d per 100 sheep. Farmers, who dip but once a year, use a composition comprising boiled arsenic, grease, black soap, and soda; and this mixture is said to answer well. The sheep are mostly wintered at home, but a portion—chiefly hogs—is always transferred to the lower parts of the county, or into the neighbouring counties of Ayr and Lanark. The cost of wintering varies somewhat according to the quality of the pasture, but for some time past it has ranged from 6s. to 7s. per head. In some cases the arrangement regarding the wintering is, that only those sheep alive at the first of April are paid for, and that the stock are kept away from young rye-grass after the first of March. The rate of mortality is not so high as in several other counties, notably those of Selkirk and Roxburgh; but “trembling” and braxy are more or less prevalent every year. Only a small percentage of the animals attacked by these diseases survive them. Several farmers, however, have occasionally succeeded in suppressing “trembling.” One of the most successful experimenters recommends a very simple mode of treatment, thus: “Keep the animal quiet, and administer to it a mixture of treacle and saltpetre.” The wether lambs are mostly sold to butchers in Greenock, Paisley, and Glasgow, but those which are not fat enough for killing are largely bought by Irish dealers for exportation to Ireland. The cast ewes and “seconds” and “shott” ewe lambs are disposed of at the Lanark auction mart, while a good many two-year-old wethers are annually consigned to the Lanark market on the first of October. Some useful lots of wethers and cast ewes are also sold by Mr Wilson at the Paisley sales, where a good demand is sometimes experienced.

While most of the sheep farmers, as we have hinted, give preference in breeding to size and substance, and are apt to overlook the finer characteristics of the breed, they have amongst them a few fanciers of the ideal blackface. Prominent amongst these is Mr Stewart, Carrot, Eaglesham, who, it may be mentioned, has recently obtained no small recognition of the success of his endeavours to improve his stock. At the county show

at Paisley, last summer, he headed both the aged ram and shearling classes, which were well filled and exceptionally meritorious. His tups are very well bred, and would do credit to almost any of the first-class flocks of the country. Other well-known breeders are Mr Fleming, Threepeland, Eaglesham; Mr Scott, Hillside, Kilmalcolm; and Mr Gibb, Gladstone, Bishopston. Sheep farming is extensively practised in the Eaglesham district, but in the Neilston, Paisley, and Johnstone districts, and down through the parish of Houston, comparatively few sheep are kept as regular stock. Within easy reach of Paisley a few parks are taken by butchers and dealers for grazing hogs, &c., while several arable farmers winter a large number of the same class of sheep drawn principally from the western part of Argyllshire. These are usually sent to their winter quarters about the first week of October, and returned to their native hills about the first of April. In some cases the whole farm is let at a fixed rent, and the sheep-owner puts on any number he may choose; but, in the majority of cases, a definite number of sheep is bargained for, and this is by far the most satisfactory plan. In the south-western district, or lower ward, many good flocks are kept.

Along the lower part of the Clyde few sheep are bred or grazed, in the district stretching from Greenock up to Johnstone they are more numerous. Several farmers in the flat district, on the brink of the Clyde, prefer buying sheep—cast ewes and hogs—in the autumn, and fattening them in the parks, and it is a common belief that the reduced prices of dairy produce will tend to encourage this practice as well as sheep farming generally. Already, indeed, we know of farmers who have curtailed their dairy herds to make way for sheep.

Very few sheep other than blackfaced are bred in the county. Border Leicesters, however, have found their way into the lower ward, and, if we mistake not, a few Cheviots, are to be met with in the higher districts. A select stock of the former class has been established at Bridge of Weir by Mr M'Phedran. It is skilfully managed, and comprises a number of very well-bred specimens of the favourite Border breed. Successful breeders of Border Leicesters are John Pollock, Springside, Lochwinnoch; Mr Houston, of Johnstone Castle; and Mr Thompson.

In view of the increasing interest in sheep farming it is very important that every obstacle in the way of its development should as far as possible be removed. Hitherto pastures have not been so well managed as could be desired, and unquestionable benefit would flow to all concerned if more burning was done. The hilly districts of the county are largely over-run with rank rough heather, which is not only useless as food for

stock, but literally destructive. It is generally contended that the burning of heather is hurtful to the game interests, but a great proportion of heather in Renfrewshire is so strong and coarse that neither sheep nor birds enter into it. When the sheep stray into it in spring, when their wool is loose, they are partially relieved of their coats, which, cheap though wool for some time has been, means loss to the farmer. If hill pasture were more carefully treated—*i.e.*, the heather burned at the proper time—it would become immensely more valuable, and go far in improving the quality of the sheep. Another influence might, we think, be more exclusively brought to bear on the ovine stock of the county—better attention at the hands of the owner. On a great many of the farms no qualified shepherd is employed; the sheep share the attention of workmen in common with ordinary agricultural pursuits.

The following statement shows the number of sheep in the county at various times since 1857:—

Sheep.	1857.	1870.	1875.	1881.	1885.
One year old and upwards, . . .	14,472	21,785	23,431	20,179	20,639
Under one year, . .	8005	12,439	13,429	11,058	11,793
Total, . . .	22,477	34,224	36,860	31,237	32,432

Labour.

This county enjoys better command of labour than most others, but its numerous factories, when in full work, give employment to many people who were formerly engaged in agriculture. The result of this has been observable in the rates of wages. Notwithstanding the introduction and extended use of farm machinery these have increased from 30 to 50 per cent. during the past quarter of a century. Writing to us on the subject of farm wages an agriculturist says:—“Dairymaids formerly receiving £4, 10s. or £5 per half-year, now get double that sum; single ploughmen of the first class, before receiving £11 per half-year, now get from £14 to £16; and married* ploughmen’s wages have advanced from 14s. to £1, or 22s. per week, a free house being provided in each case. Outdoor female workers are now paid at the rate of 1s. 9d. per day, instead of 1s. as formerly. Tradesmen’s accounts are much heavier than they were twenty-five years ago.”

The male servants of the county may be divided into three classes—(1) married ploughmen, (2) single ploughmen, and

(3) lads. The first class a few years ago obtained from 19s. to 23s. per week, along with—in many cases—a free house. During the past year or two, however, wages have diminished, and they now range from 19s. to 21s. per week. Single ploughmen are hired at from £10 to £16 per half-year, in addition to board. They are mostly employed on the smaller farms, and board in the farm kitchen. The third class consists of boys whose employment is driving milk carts and doing general farm work. The current wages for these varies from £4 to £7. Many of the farmers' sons devote their time to farm work, and some of them have obtained local distinction at the annual ploughing competitions of the Renfrewshire Agricultural Society. Bowers employ their own servants.

There are also three distinct classes of female servants connected with the agriculture of the county. Young girls are engaged on the smaller dairy farms, at from £6 to £9, to assist in the lighter dairy work; to work out or indoors as circumstances demand. The second class is made up of assistant dairymaids for purely indoor work. Their wages run from £8 to £10 per half-year. Housekeepers and dairy superintendents form the third class, and the wages of these range from £10 to £12, 10s.

The conditions of hire in the case of shepherds differ somewhat from those of ordinary farm servants. Shepherds earn from £50 to £60 per annum, in addition to free house and grass for a cow.

Unmarried servants are usually employed by the half-year, but yearly engagements are more common in the case of married men. On one or two estates servants' cottages are fairly abundant, notably on the Blantyre property; but generally there is a scarcity of accommodation for married labourers.

Agricultural Labourers' Allotments.

It may be of interest to the advocates of the "three acres and a cow" theory to know something of how agricultural labourers are situated in the west of Scotland. Renfrewshire, according to the census returns of 1881, contains 1851 male farm servants, of whom only 3 have ground for potatoes, and 4 a general run for a cow. Some 106 hold land under $\frac{1}{8}$ th of an acre in extent; 5 hold from $\frac{1}{8}$ th to $\frac{1}{4}$ th of an acre; 1 occupies over one acre of arable land; while 2 hold a similar extent of pasture land. The total number of allotments or field gardens detached from cottages is 114, and these are all held on yearly tenancies. Sixteen railway labourers hold allotments ranging in size from $\frac{1}{8}$ th to $\frac{1}{4}$ th of an acre detached from cottages; while three hold a like quantity of land attached to cottages. Nine, strictly agricultural employees, occupy garden allotments attached to

cottages from year to year. Of these six pay an average rental, including the cottage, of £5; while three sit rent free.

Swine—Poultry.

Swine.—A good many pigs are kept. They are mostly of the ordinary Scotch cross breeds, reared for the consumption of waste dairy products. A few specimens of the Berkshire and Yorkshire breeds, however, are to be met with in the upper districts. The total numbers of swine enumerated in the county, in various years, were as follows:—In 1857, 1761; 1870, 2571; 1875, 1959; 1881, 1310; and in 1885, 1815. It will thus be observed that there are fewer pigs in the county now than in 1875. This, we think, is matter for regret. Pig-rearing would, we feel assured, repay closer attention than it at present obtains from farmers; and though the number of swine is considerably less now than in 1875, we are pleased to see it once more on the ascendency.

Poultry.—Poultry-farming, like pig-rearing, is rather neglected. Most farm-yards carry poultry to the number of from 30 to 100; but in view of the enormous quantities of eggs, &c., imported from continental countries, together with the populous character of the county, there seems to be ample room for profitably developing this useful, if minor, adjunct of the farm. The number of poultry in the county at present is computed thus:—Turkeys, 1947; geese, 883; ducks, 12,509; fowls, 81,928; total, 97,267.

The Renfrewshire Agricultural Society.

The commencement of this, one of the most important and successful county societies in Scotland, was due in a large measure to the farmers of the parishes of Erskine and Inchinnan. In 1802 a few gentlemen formed themselves into an association, called "The Inchinnan and Erskine Farmers' Society," which had for its primary object competitions in ploughing. The first ploughing match took place the same year (1802). In 1804 the Society was joined by Renfrew parish, and in that year the association extended its sphere of improvement, and held a cattle show at Inchinnan. Ploughing matches and cattle shows were held annually to 1819, when it was decided to extend the Society in order to comprehend a wider area. The first meeting was held in Paisley on the 17th June 1819, when it was resolved to form the Society under the name of "The Renfrewshire Agricultural Society," having for its object the promotion of agricultural science and improvements. At the outset it embraced only eleven parishes, but it gradually widened its boundaries till it comprehended the entire county.

A general meeting of the Society was held in Paisley on 9th December 1819, when rules and regulations were drawn up. Membership was restricted to those residents possessing property in either of the above parishes. Life membership was fixed at £1, 11s. 6d. Under the rules, prizes were to be given and competed for annually by the members for—

1. Best bull above three years old.
2. Best bull under three years.
3. Best milch cow.
4. Best two year old quey.
5. Best stallion.

And for the best exhibitions of ploughing, draining, manuring, and other displays of agricultural skill.

The bulls and stallions gaining the prizes were to be kept by the owners for the use of the neighbourhood during the serving season, but members were always to have a preference, and the prices to be charged were to be fixed by the Society. There were bye-laws to the effect that members who were elected directors, and did not accept office, were to be fined 5s. ; and those accepting but failing to attend meetings, were to be fined 1s. for each absence. The first ploughing match was held in 1820 on Barlush Farm, Johnstone, and on each successive year, down to the present time, the matches have taken place. The first cattle show was held at Renfrew on 9th June 1820, but only two classes appeared—that of aged bulls and milch cows. The first prizes in these classes were gained by Mr John Bowie, Dykebar Farm, Paisley, the father of the present tenant, and Archibald Spiers, Esq. of Elderslie. On 27th July 1820, the Society had on exhibition a double mould-boarded plough, with hoes attached of malleable iron, and a drill harrow, having also hoes attached. These implements were made by John Wilken, wright, Uddingston, and after the directors had seen the same at work in a field near Paisley, they expressed their satisfaction with them, and recommended their adoption by the members of the Society and persons engaged in drill husbandry.

The ploughing match took place next year at Nitshill, and it is noteworthy that 64 ploughs competed. The first prize was gained by James Gardner, Arkleston—a noted ploughman in the annals of the Society—with a wooden plough ; while the second prize fell to William Ronald, Laigh Parks, with an iron plough. There were other eight prizes awarded, of which five fell to wooden and three to iron ploughs. Next year the cattle show was held in Paisley, and the classes previously noted were all represented with exception of that for two-year old heifers. In the following year, however, every class was in itself a centre of keen competition. For many years the Society always

selected in the cattle department five judges to act together in awarding the prizes, instead of the more modern system of three or one. On 30th December 1822, Sir John Maxwell, M.P., convened a meeting of the Society for the purpose of considering the propriety of suggesting a meeting of the noblemen and gentlemen of the county to consider the proper remedy for the then existing agricultural distress. The resolutions moved by Sir John, and adopted at that meeting, are of importance, bearing on the distress of the present time. They were to the effect "that the produce of land had fallen in price nearly one-half since 1817; that the rents of land and price of agricultural labour had not fallen in proportion with the produce of the farm; that the portion of expense of agriculture which originated in taxation had hitherto undergone scarcely any reduction; that the communications with market towns by means of canals, roads, railways, and bridges continued to be burdened with heavy toll dues and pontage to meet the interest of debts contracted at their formation."

A committee was appointed to prepare an application to the farmers of the county on the subject, and having done so a meeting of the farmers was soon afterwards held at Renfrew, at which the spirit and substance of these resolutions were fully considered and discussed.

It is worthy of note that in 1824, by the liberality of Mr Ludovic Houstoun of Johnstone, who gave three separate prizes of £5, 5s. each, the cattle show was extended so as to take in classes for the best two-year old lean stot, and the best two-year old quey in calf. The class for stots did not prove successful, and was after a year or two abandoned.

On 5th April 1827 a general meeting of the Society was held, for the purpose of considering the toll dues leviable on manures, and a petition was drawn up to the Road Trustees, stating how heavily this tax pressed upon the farming interest, and praying for redress. At the annual general meeting of members held on 29th May 1828, a proposal was made to include the whole county within the scope of the Society, and a committee having been appointed to revise the rules, a new code of regulations was prepared and adopted at the general meeting on 29th May 1829, embracing the whole county within the sphere of its operations. In other respects the rules were similar to the original ones, with this exception, that the cattle competitions were much extended, and in the following year a premium of £15 was awarded for the best stallion, which was won by Thomas Pollock Windhill, Eaglesham. The constitution of the Society was somewhat altered at a general meeting held on 18th February 1831, when sons of members were to be allowed to become members on payment of half of their fathers' entry money.

On 6th October 1831 the Society was again called together for the purpose of considering the laws for the equalisation of weights and measures, and the expediency of establishing within the district a uniform practice of selling potatoes and other produce usually sold according to heaped measure, by weight alone. It was resolved to petition the Legislature, and seek the assistance of other societies in also petitioning the Government to make selling by weight alone imperative on all dealers; and the efforts of the Society in this direction seem to have been fairly successful.

On 10th January 1832 a general meeting of the Society on the subject of the Reform Bill was held at Nitshill—Sir John Maxwell, Bart., in the chair—when it was resolved to petition Parliament in favour of the Reform Bill; and the bill having passed the House of Commons the Society, on 2nd April 1832, petitioned the House of Lords in its favour. On 14th March 1833 a committee, who had at a previous meeting been appointed to revise the rules of the Society, reported their proposed rules to a general meeting, and these were adopted. These rules were more general in character than the present regulations, and gave the directors power to offer prizes for all classes of live stock as they might consider proper; and sons and *bona fide* servants of members were to be allowed to compete at the ploughing matches. An extensive prize-list was that year offered for cattle, while premiums for the best brood sows were in the list, but none put in an appearance. In 1834 sweepstake competitions for lots of cows were introduced, and were continued until quite recently. Prizes were again offered for the best brood sow and best boar, but none appeared. A general meeting of the Society on 15th January 1835 was held for the purpose of taking steps to secure the uniformity of measures for the sale of milk throughout the county, and a committee was appointed to consider the matter. The exertions of the committee had ultimately a successful result.

In 1835 the Society extended its sphere of operations, and offered prizes for the best field of potatoes in the county of not less than 4 imperial acres, and for the best field of turnips of not less than 2 acres. At the cattle show prizes were offered for the best two-year old draught colt and two-year old filly respectively; and in the following year prizes were given for the best draught mare of the Clydesdale breed.

On 17th March 1836 a special meeting was called to consider the propriety of making application for a grant of the Highland Society's district premiums, and the application having been made, they were granted in 1839, and have been, through the liberality of the Directors, extended occasionally to the Society

down to the present date—having been given in succession for seeds, swine, and cattle. Prizes in 1836 were offered for the best 5 quarters of seed wheat; and at the competition on 29th September 1836 there were eleven samples placed before the judges.

In 1837 prizes were added for whitefaced sheep, and again for swine, and there was a fair competition. The stallion prizes, which had been given up for several years, were again resumed, and in 1837 the premium of £15 was won by Samuel Clark of Manswraes, who was also successful in 1838. On 13th December 1838 the Society subscribed £10, 10s. to the Highland and Agricultural Society, in aid of the funds being raised for the erection of a museum in connection with the National Society. In 1839 the directors offered prizes for (1) the best grubber, and (2) the best pair of barn fanners. But the judges, who tested these implements at Hawkhead Mains on 31st May 1839, considered the grubbers competing not of such excellence as to merit prizes. The trial of fanners resulted in the first prize being awarded to Mr Smith, the judges expressing a favourable opinion of Mr Allison's invention and improvement on the feeding board of the machine exhibited by him.

In 1840 the ploughing match competitions were divided into those above twenty and those under that age. The Highland Society's medal was given to the senior ploughmen, and has been so allocated every year since then. At the autumn competitions in 1840 prizes were awarded for the farm exhibiting the best state of cultivation in point of dryness, and awarded to John Paterson, Easter Walkinshaw, and John Young, West Fulwood, respectively. The prizes for the best farms were continued for many years, and the principal prize-takers during the course of the competitions were John Colquhoun, Corkerhill, Pollokshaws (who was several times first), and John Young, Wester Fulwood. In response to a request from the Highland and Agricultural Society in 1841, the Renfrewshire Agricultural Society suggested the advisability of offering premiums for the best description of subsoil and draining ploughs, and for artificial and portable manures. In 1841 the Society resolved to select a stallion to travel the district at a premium of £25. It was again gained by Mr Samuel Clark. In their report on 20th September 1841, on the competitions for the best managed farm and for growing wheat, potatoes, and beans, the judges felt called upon "to express in an especial manner the high satisfaction which they experienced in the whole farms and crops submitted to them. All of these were in the highest degree creditable to the competitors, and such as to reflect great honour upon the advanced state of the agriculture of the district."

In regard to the ploughing match of 1842, the judges ex-

pressed their unqualified approbation of the whole work performed by the competitors. In the judges' report on the farm competitions of 1843, they referred to the disastrous character of the season, which had resulted in the partial failure of various lots of wheat and potatoes; and while expressing themselves highly pleased with the general management of the farms, they directed increased attention to the cleaning of green crop lands. On 4th January 1844 the directors resolved to procure the services of Professor Johnson, Edinburgh, to give lectures on chemical manures, and he delivered his lectures in Paisley in February 1844.

The cattle show of 1847 was remarkable for the exceptional success which attended the exhibits of Ayrshire cattle by James Robertson, Hall of Caldwell, Neilston—a success which followed Mr Robertson's herd as long as it existed. This (1847) year the first premium for flax was won by Colonel Harvey of Castlesemple; while the prize for the best farm went to Mr Gilmour, Mid Henderston, Paisley. The judges, in their report of crops, stated that the bean crop excelled anything they had ever seen, while they pronounced the carrot crops to be very superior. The Highland Society's premiums were this year awarded for ryegrass seed and seed wheat. At the annual general meeting of 25th May 1848 it was proposed that the Society resolve itself into an association for the insurance of the cattle of members and of the district generally. The matter was more fully considered at a special meeting held on 12th October 1848, and after several other meetings the Cattle Insurance Association of Renfrewshire was formed; and still continues to flourish.

The judges, in their report of the dairy produce, dated 12th October 1848, stated that thirty-four lots of fresh butter were exhibited, and that they never saw a finer display. The judges this (1848) year, in their report of potatoes, stated that the tubers were of very excellent quality and appearance. On 30th August 1849 Lord Blantyre, as convener of the County Committee of the Highland Society, wrote to the directors asking them to suspend their annual show for next year, and to co-operate with the Highland Society in their Show at Glasgow; but the directors declined to do so. In preference to abandoning their show, they resolved to subscribe £20 to the great national show at Glasgow in 1850. A strong desire was expressed by the agriculturists in the Greenock district to have the county show held there in 1850, and every third year thereafter, but the directors could not see their way to entertain the suggestion.

In 1850 the late Thomas Coats of Ferguslie offered premiums to be awarded to the best ventilated dairies within the county, and Messrs Donaldson, V.S., and Mr Glen, Hawkhead, awarded the prizes. These premiums were continued by Mr Coats for

several years, and proved very interesting and useful. The judges, in their report of 1850, stated that there were great improvements in the construction of the new byres visited by them, but they were of opinion that great improvements could still be made in ventilating milkhouses. As a stimulus to dairymaids, prizes were this year (1850) given to the dairymaids who made the best lots of butter. These prizes were continued for several years.

In 1851 the Society added poultry to their list of competitions. On 11th March 1852 it was resolved that the advertisement of the cattle show should bear a prohibition against the dressing of bulls, by reducing the excess of throat skin. This cruel custom had evidently been pretty freely practised in the county at that time. In 1851 and 1852 the competition in crops was abandoned. At the annual general meeting of 1852 it was agreed to have a Society's medal awarded to any animal gaining the first prize in the same class two years in succession; and also to ploughmen and farmers who won two consecutive firsts.

That medal has been continued on the same conditions down to 1882, when a new die was cast. As Mr Cochran Patrick indicates in his *History of the Medals of Scotland*, the die was unique, inasmuch as it contained engravings of two noted animals of the time, viz., Mr Drew's Clydesdale mare "Sheba," and Mr Bartlemore's Ayrshire bull "Baron o' Buchlyvie."

In 1852, in addition to the October premiums for butter, seeds, &c., premiums were offered for the most approved model of a corn stack, and the first prize was won by Mr Whyte, Fulwood, two years in succession.

The premium for stallions, which had long been suspended, was resumed in 1856, when £20 was offered for a horse to travel the district, with 12s. 6d. for service, and 12s. 6d. additional when the mare proved in foal.

On 4th June 1857, a meeting was held for the purpose of establishing a corn market in Paisley. It was resolved to make it a sample, and not a stock market, and the arrangements thereanent were accordingly carried out.

In 1857 the premiums for stack models and butter were discontinued; and the Society directed their attention for the first time to improvement of agricultural labourers' dwellings.

In 1859 it was resolved by the Society to have two entire Clydesdale horses to travel the county, with premiums of £35 and £25 respectively, and the competitions having taken place on 24th February 1859, the prizes were awarded to Mr King's "Prince of Wales" and Mr Salmon's "Champion." These prizes were continued for several years, but latterly, when the Glasgow prize horse district was widened to the extent of embracing a large portion of the county, the local premiums were withdrawn.

At the annual general meeting of 1861, it was unanimously agreed to give up the competitions of beans, wheat, cabbages, oats, &c., which had been annually held in the autumn of past years, and to hold the show of dairy produce along with the summer show of cattle, and this course has been followed ever since. At a meeting held on 25th January 1862, the Society took up the question of the cattle plague, and resolved to press measures on the Government in connection with the same. The Society ceased to give prizes for poultry in 1869.

In that year a committee was formed for the purpose of dealing with the question of chemical manures, of testing the character of the same, and of giving the result of their investigation to the Society. The Society frequently had the question before them, with the result that in 1870 Mr Robert R. Pollock was appointed chemical analyst to the Society. The appointment, however, was short lived, the office having been abolished in 1876.

In 1869 the Society instituted a practical investigation into the working of agricultural implements, and conducted trials on the lands of Nether Southbar, occupied by Mr John Gibb.

In February 1871, Sir M. R. Shaw Stewart, Bart., called a meeting of the Society to consider the state of the French peasant farmers, and a large committee was formed to secure contributions with a view to aiding the distressed agriculturists beyond the Channel.

On 12th December 1872, Colonel Campbell called a meeting of the Society for the purpose of establishing a stock book and herd book; but after several meetings had been held for the purpose, it seems to have dropped.

In 1877 new life was infused into the Society, with the most gratifying results. The directors, in consideration of the very large number of light-legged horses in the county, arranged twelve open classes for these in connection with their annual show, and they are still continued with great success. In the same year also prizes were offered for dogs, and these competitions have also been continued. For the show of 1878 the directors arranged Derby sweepstake competitions for one-year old colts, one-year old fillies, and three-year old heifers. The entries for these competitions close in the month of September prior to the show, and this fact attaches a peculiar interest to these sections of the annual summer exhibition.

On 15th January 1880, the Society was convened in connection with the Royal Commission on Agriculture, and a committee of the best and most experienced men in the county was appointed to give written and oral evidence to the Commission. That committee consisted of (1) proprietors, (2) land agents, (3) dairy farmers, (4) grazier farmers, (5) agricultural farmers.

On 18th November 1880, a committee, who had been previously appointed to revise the constitution of the Society, brought up and reported upon a list of new rules and regulations to the general meeting of members held that day. These rules were adopted, and they entirely altered the constitution of the directorate of the Society. The primary objects of the Society were declared to be the advancement of the agricultural capabilities of the county, the encouragement of the breeding of horses, cattle, and sheep, the promotion of agricultural science and art, as well as other kindred arts. The directorate was to consist of thirty members, five land agents, five commercial men, and twenty farmers, allocated from the different parishes; and many other material and beneficial alterations were adopted. These included the combining of the offices of secretary and treasurer.

On 10th November 1881, the Society had before them the Scottish Farmers' Alliance Bill, on which a long discussion took place, but ultimately the subject was allowed to drop. At this meeting they also discussed the question of fixtures in agricultural holdings, and considered the advisability of having some alterations on the law regarding the same. These matters at that time became exceedingly important, because of the many questions which had recently been raised in the County Court between landlord and tenant regarding what were truly fixtures on the farms. The subject was very ably handled by the Society, and it is owing to their enterprise, probably more than any other, that provisions were made thereanent in the Agricultural Holdings (Scotland) Act, 1883.

The directors, after the passing of this Act, took into consideration the provisions of the measure, and recognising the great importance of having a common understanding in the county, alike between landlord and tenant, regarding the claims under that Act, they, after several meetings of the landlords and tenants of the county, adopted the following report and scale of compensation :—

Compensation under Schedule I.

The Act makes it compulsory on the part of the tenant to obtain the landlord's consent to improvements under this schedule, and leaves the question of compensation open to agreement between parties. The committee were of opinion that as regards (1) laying down of permanent pasture, (2) making permanent fences, (3) reclamation of waste land, the Act should be amended so as to include these under Schedule II.

Compensation under Schedule II.

Drainage being the first principle of good husbandry, tenants should be encouraged to expend money on this improvement. The committee were of opinion that fifteen years for level lying land, and twenty years for side lying land, with rates of exhaustion 1-15th and 1-20th in each year respectively, should be adopted as the basis.

Compensation under Schedule III.

The following scale was adopted for medium land in a fair state of cultivation. Lime, seven years arable and ten years pasture, with rates of exhaustion 1-7th and 1-10th in each year respectively, and claim to include carriage:—

Manures.	Years of durability.	Rates of exhaustion in each year.
Half-inch bones. . . .	8	{ 3-11, 2-11, 1-11, 1-11, 1-11, 1-11, 1-11, 1-11
Bone meal,	5	4-10, 3-11, 1-10, 1-10, 1-10
Dissolved bones,	4	2-5, 1-5, 1-5, 1-5
Phosphate guano,	4	2-5, 1-5, 1-5, 1-5
Other guanos,	4	4-10, 3-10, 2-10, 1-10
Superphosphate,	2	2-3, 1-3
Ground phosphate,	4	4-10, 3-10, 2-10, 1-10
Dung,	5	4-10, 3-10, 1-10, 1-10, 1-10
Gas lime and police dung, . .	3	2-4, 1-4, 1-4
Nitrate of soda and sulphate of ammonia,	2	3-4, 1-4
Cake, bean meal, &c., consumed,	5	2-5, 1-5, 1-5, 1-5

Residuary manurial value left by consumption on the holding of cake or other purchased food of good quality and recognised analysis, thus—

Name of Food.	Produce value per ton.
Decorticated cotton cake,	£3 10 0
Cotton cake,	3 0 0
Linseed,	2 0 0
Potatoes,	0 4 0
Turnips,	0 3 0
Beans and pease,	1 10 0
Wheat or other grain,	1 2 0
Hay,	0 16 0
Straw,	0 11 0

These statistics form a guide for outgoing tenants in making their claim of compensation; and when made on the basis adopted, the landlord knows to accept of the same. Thus, through the influence of the Society, much arbitration and litigation has been averted.

It has long been a more or less customary practice among the cattle breeders and exhibitors of the county to "trim" their stock to the point of injury, and the Society took steps for its suppression in 1885. They arrived at the conclusion that "doctoring," as it is called, was a cruel and altogether unnecessary practice, and made provisions for preventing it. As a result of repeated deliberations, they recently opened classes, in their annual show, for two-year old heifers in calf and in milk—an arrangement which is much appreciated by breeders.

In recent years the position and influence of the Society has been much improved. The premiums offered have been augmented and extended. The roll of members has been doubled during the last eight years; while the entries for the various competitions in a like period have increased gradually from 300 to 800. The following noblemen and gentlemen have acted as office-bearers of the Society since its inception in 1819:—

Presidents.

- 1819 to 1853. Sir John Maxwell of Pollock, Bart.
- 1853 „ 1855. The Right Honourable the Earl of Glasgow.
- 1855 „ 1856. Wm. Muir of Caldwell, M.P.
- 1856 „ 1858. John Hall Maxwell of Dargavel, C.B.
- 1858 „ 1863. The Right Honourable the Earl of Glasgow.
- 1863 „ 1865. Colonel Muir of Caldwell.
- 1865 „ 1866. John Hall Maxwell, C.B.
- 1866 „ 1867. Thomas Speir of Blackstoun.
- 1867 „ 1868. Captain A. A. Speirs, M.P.
- 1868 „ 1869. Sir M. R. Shaw Stewart of Greenock and Blackhall, Bart.
- 1870 „ 1872. Lieut.-Col. A. C. Campbell, Bart., of Blytheswood.
- 1872 „ 1876. The Right Hon. the Earl of Glasgow.
- 1876 „ 1878. Sir William Stirling Maxwell of Pollock, Bart., M.P.
- 1878 „ 1879. P. Comyn Macgregor of Brediland.
- 1879 „ 1880 & 1881. Sir A. C. Campbell, Bart.
- 1880 „ 1883. Sir M. R. Shaw Stewart, Bart.
- 1883 „ 1884 & 1885. Alexr. Crum of Thornliebank, M.P. for Renfrewshire.
- 1885 „ 1886. Thomas Glen Coats of Ferguslie Park, Paisley.

Secretaries.

- 1819 to 1839. A. H. Simpson, Town Clerk, Paisley.
- 1839 „ 1858. William Martin, do. do.
- 1858 „ 1862. Peter Henderson, Sheriff Clerk of Renfrewshire.
- 1862 „ 1877. Robert Loudon Henderson, Writer, Paisley.
- 1877 „ 1886. William Bartlemore, Writer, Paisley.

Treasurers.

1819 to 1828. William Peock of Meigleriggs, Paisley.
 1828 „ 1864. William Glen of Hawkhead Mains, Paisley.
 1864 „ 1875. Matthew Wilson, Blackstoun, Paisley.
 1875 „ 1880. Robert Wilson, Forehouse, Kilbarchan.
 1880 „ 1886. William Bartlemore, Writer, Paisley.

We have devoted more space to the history of the Renfrewshire Agricultural Society than we originally intended. So active and useful, however, has been its career, and so great its assistance to the agriculture of the county, that it deserves more than a mere passing notice. We know of no Society that has looked after the interests of agriculture more faithfully, or more thoroughly fulfilled its objects. It has passed scathlessly through many trying years, and still goes on to flourish—increasing strength with age. At the present time, despite the agricultural depression, it is more vigorous perhaps than it has ever been.

Industries—not Agricultural.

The agricultural importance of the county, though considerable, is nothing to the magnitude and value of its industrial resources. Every town and hamlet is possessed of some notable feature, and several of their names have become household words of no small celebrity. Who, for example, has not heard of the celebrated Glenfield starch, the far-famed Paisley shawls, the well known anchor thread, the unparalleled shipbuilding industry of the Clyde, or Greenock refined sugar? These industries in themselves have earned for the district a reputation and distinction that places it above almost all others. But besides these, Renfrewshire is noted for innumerable industrial institutions of considerable moment. Some of them are centuries old, and still continue to flourish. They afford employment to a large and ever increasing population, and supply the world with products of unquestionable superiority. We need not, however, dwell further on generalities; let us describe more minutely the interior of what may not inaptly be termed the “workshop” of the west.

Greenock and Port-Glasgow.

These towns, though originally some two miles apart, are now all but connected. The intervening space is gradually disappearing, and they are becoming more and more intimately connected commercially. Greenock is the largest town in the county, ranking as it does fifth among the eight principal towns in Scotland; while Port-Glasgow has developed to the posses-

sion of some 13,294 inhabitants. Both have grown very rapidly. Originally Greenock was but a small fishing village. Its vicinity to the sea and its shipping facilities have brought it into prominence, and its industrial importance has attracted people from all parts of the country. Both towns are celebrated for shipbuilding, as well as being the seats of other industries. Shipbuilding and sugar-refining constitute the principal occupations; but there are also fifteen engineering works and iron foundries. Rope and sail-making, wool spinning, tanning, timber dealing, and other pursuits of minor importance are also extensively carried on.

Each of them contain shipbuilding establishments to the number of eight, and several of these have engineering works attached to them. The oldest and largest firms are those of Messrs Caird & Co. and Messrs. Scott & Co. of Greenock. A foremost place in the great industry was for many years creditably held by the firm of Steele & Co., but it recently ceased working. Caird & Co.'s yard was established about 1840, and its history has been marked with unchecked progress. Down to the end of 1883 they had launched and finished some 240 vessels, and made over 300 pairs of engines. During the last twenty years they have turned out no fewer than 28 vessels of an average burden of 3000 tons each for the Hamburg American Steam Packet Company, also 21 vessels of an aggregate of 58500 tons for the North German Lloyd. Not a few of the magnificent steamers of the Peninsular and Oriental fleet were made by them, and for the Inman Line Messrs. Caird & Co. have built the "City of Berlin" and "City of Chester," the two largest passenger steamships of their day. The following is a statement of their operations:—

			Tons.	Horse-power.
From 1867 to 1871 their aggregate turn out was	as	do.	79,003	13,440
" 1873 to 1876	do.	do.	69,838	12,278
" 1879 to 1883	do.	do.	55,999	45,270

In the sixteen years intervening between 1868 and 1883, Scott & Co. built 111 vessels, mostly steamships for foreign companies. Since 1868 their turn-out has been—

	Tons.	Horse-power.
1868-70,	12,879	1570
1873-75,	24,024	
1881-83,	45,421	8140

The Port-Glasgow firms of Blackwood & Gordon and Robert Duncan & Co. have also been working on an extensive scale. Since 1860 Messrs Blackwood & Gordon have built 167 vessels. Messrs Robert Duncan & Co. were at work here previous to 1840, and during the seventeen years from 1867 to 1883 they

launched 133 vessels, 55 of which were sailing ships, besides a number of river boats, and barges shipped in pieces to the Colonies. Their turn-out in tonnage was as follows:—

						Tons.
From 1867 to 1869,	.	.	.	.	.	22,815
" 1874 " 1877,	.	.	.	.	.	33,901
" 1881 " 1883,	.	.	.	.	.	37,775

Several of the yards here make a specialty of sailing ships, the principal builders on the Clyde being Messrs Russell & Co. Since their commencement in 1877, this firm have launched vessels representing a gross tonnage of over 90,000. In the year 1883 they built 28 vessels, with an aggregate tonnage of 30,610.

The following figures give a general idea of the progress of the shipbuilding industry in Greenock and Port-Glasgow:—

During the seven years 1846-52 there were turned out from				Tons.
the various yards (say),	.	.	.	87,200
During the four years 1867-70	do.	do.,	.	192,908
" four years 1880-83	do.	do.,	.	322,961

The following statistics indicate the number employed in the various Greenock shipbuilding yards and engine-shops since 1837:—

In 1837 the shipbuilding operatives numbered	1200.		
" 1861	do.	do.	1032. Engineers, 1338
" 1881	do.	do.	1658. Do., 2051

The sugar-refining industry of Greenock is one of the most important of the kind in the United Kingdom, rivalling that of London. It has been carried on in this locality for upwards of seventy years, and at present there are ten refining firms, nine of these being in Greenock and one in Port-Glasgow. Most of the establishments have doubled, and in some instances trebled, during the past twenty-five years, all of them being now of considerable size. The Roxburgh Street Company's works are capable of turning out 160 tons of refined sugar daily. The raw material comes partly from Java and Mauritius, and partly from the Continent. France and Germany are the chief sources of beetroot sugar, of which there has been a greatly-increased import during recent years. Thirty years ago there was little demand for the best beetroot article, the staple material of manufacture then being cane sugar from the West Indies. The principal improvement in the refining art is the drying of the sugar by centrifugal machines, instead of by moults. This we believe shortens the process from weeks to days. This industry has undergone rapid and substantial development during the last twenty-five years, as the following figures will show:—

Imports.

Periods.	Sugar.	Molasses.	Total.
	Tons.	Tons.	Tons.
During the four years 1830, 1840, 1850, 1851, there were imported . . .	92,412	49,409	141,821
During the four years ending 1855, . . .	149,377	78,981	228,358
Do. do. 1859, . . .	175,118	60,431	235,549
Do. do. 1863, . . .	357,552	47,939	405,491
Do. do. 1867, . . .	456,103	16,519	472,622
Do. do. 1871, . . .	689,976	19,107	709,083
Do. do. 1875, . . .	801,722	12,503	814,225
Do. do. 1879, . . .	950,345	10,434	960,779

At present the annual amount is about 250,000 tons of refined sugar, being one-third of the amount consumed in Great Britain. The number of operatives in Greenock sugar houses has increased from 584 in 1861 to 1241 in 1881.

Wool Spinning, &c.

Another important industry is that carried on by Messrs Fleming, Reid, & Co. at the Merino Mill, Greenock. This business has been in existence for forty-five years, and consists of the manufacture of worsted yarns from raw wool. Both home and foreign wools are used, the latter being imported from Russia, Mediterranean districts, and the East. From first to last the material undergoes eight different processes. These are sorting, scouring, combing, carding, drawing, preparing, roving, and spinning. The output within the last twenty-five years has more than doubled, and at present the working staff numbers 500. Considerable energy is shown in the management of this firm. Their mill, which was burnt to the ground in 1880, has been rebuilt on as large a scale as before; and with a view to extending their business, they have lately opened retail shops in all the principal towns of Scotland, and are extending their lines in like manner in England. The neighbouring establishment of Messrs Robert Houston & Sons is also an extensive manufactory. The weaving and dyeing of tweeds is the business carried on in it. The concern has been in existence for over one hundred years, and within the past twenty-five years has doubled the extent of its operations.

Shipping.

As a commercial port Greenock ranks fifth among Scotch towns. Its harbours are large and well equipped, and have railway communication both by the Caledonian and Glasgow

and South-Western systems. The chief imports are timber and sugar, and the principal exports coal and pig iron. The following table shows the amount of coal and pig iron conveyed for shipment to the harbours at various periods since 1861 :—

Periods.			Coal.	Pig Iron.
			Tons.	Tons.
For the three years ending July 31, 1864, .			317,844	15,424
Do.	do.	1867, .	344,305	34,919
Do.	do.	1870, .	410,317	66,532
Do.	do.	1873, .	529,933	74,165
Do.	do.	1876, .	736,707	24,838
Do.	do.	1879, .	614,391	19,572

Next to sugar, timber is the chief article imported. As Greenock and Port-Glasgow are the principal ports for the unloading of timber in the west of Scotland, this trade is a very important one, and has grown considerably since 1860. The timber chiefly imported is American and Baltic pines, with a considerable quantity of teak for shipwright purposes, and staves for cooper work. The red and yellow pines come from Canada and the Northern States, pitch pine from Pensacola, and spar wood from Oregon. Timber from the North American regions is only shipped in summer—two cargoes of it arriving yearly—one in July and another in October. The wood being consigned to importers is stored in large ponds, to be gradually disposed of to sawmillers and others. Logs for masts or spars sometimes approach 100 feet in length, but 30 feet is an average length for general purposes. Much more Baltic timber is imported now than twenty-five years ago, the abolition of a duty which was formerly imposed having encouraged the demand.

There are double the number of saw-mills in the district than there were in the year 1860, and the premises of the older firms have all been greatly enlarged. The following table, showing the timber import at Greenock for a series of years beginning 1830, will illustrate pretty clearly the expansion of the trade:—

Periods.			Timber.	Deals.	Staves.
			Loads.		
For the four years 1830, 1840, 1850, 1851, .			161,268	5,962	18,158
For the four year period ending Sept. 30, 1855,			182,790	8,223	13,092
Do.	do.	1859,	231,462	8,245	18,221
Do.	do.	1863,	206,461	9,207	17,533
Do.	do.	1867,	290,072	9,941	19,497
Do.	do.	1871,	294,050	8,520	27,408
Do.	do.	1875,	403,883	731,046	20,897
Do.	do.	1879,	398,199	1,564,848	...

It may be explained that a load means 50 cubic feet. Deals are planks, 3 inches thick, intended to be sawn into boards. Staves are short pieces of wood for the cooper trade.

The following is a statement of the total traffic to and from the harbours, as carried by the Caledonian and Glasgow and South-Western Railways. We may mention that the Glasgow and South-Western branch was not opened till 1870:—

Periods.	Caledonian Ry.	G. & S.W. Ry.
	Tons.	Tons.
For the three year period ending 1864,	385,737	...
Do. do. 1867,	442,507	...
Do. do. 1870,	532,045	50,999
Do. do. 1873,	462,324	261,798
Do. do. 1876,	563,424	283,999
Do. do. 1879,	548,499	207,260

Between the first three years' period and the last there has thus arisen an increase of 162,762 tons in the amount of goods passed through the harbours. The valuation roll and census returns also bear testimony to the progress of the town. The population of the Parliamentary burgh since 1851 was as follows:—

Year.	Inhabitants.
1851,	36,689
1861,	42,098
1871,	57,825
1881,	63,902
1881 (Landward),	2,802

In point of valuation the town has more than doubled its ratable property since 1860. In that year it had a gross valuation of £129,476, while its value for 1885-86 amounts to £401,124. It is worthy of note that its valuation in 1881 was eight times, and its population ten times as large as in 1765, while between the years 1830 and 1881 the harbour revenue leapt up from £9000 to £74,000.

In 1871 a graving dock, 650 feet long, was opened at Garvel, at a cost of £80,000; and some five years ago still more extensive operations were begun in the same locality. This scheme includes the James Watt Dock, covering 14½ acres, to cost £350,000,—which has just been completed,—two tidal harbours each 7 acres in extent, and a great harbour covering 46 acres, all formed by embanking the river. The total cost of the work will be £150,000. The James Watt is the only wet dock on the Clyde where tonnage of largest size and draught can be always afloat, and the only place on the Clyde with waterside

warehouses, thus presenting not only to shipowners a valuable guarantee of safety, but to the grain trade important new facilities and advantages. There is a depth of 32 feet on the sill of the dock. The commodious sheds and waterside warehouses into which cargoes pass direct from the ship insure large saving in handling and the minimum of expense. The Caledonian and Glasgow and South-Western Railways, arms of the London and North-Western and Midland systems, run alongside ships and through warehouses (whereby delivery and distribution throughout the country are rendered cheap and expeditious), and the large fleet of steamers employed in the Irish and in the coasting trades to all ports of any consequence call at Greenock, whereby distribution throughout Ireland and along the coast is more quickly and economically carried out than hitherto. Wharfage on all kinds of grain is 5d. per ton on import at Greenock, as compared with 1s. 3d. per ton at Glasgow; and there are obvious savings of cartages, portrages, and other charges from the waterside delivery into warehouse.

The importance of Greenock to the grain trade by the opening of the dock will be more fully realised from the following statistics of the movement of breadstuffs in and out of Glasgow:—

Between 28th July and 1st September 1886—six weeks—the total amount of grain stuffs imported was 50,582 tons, while 31,129 tons were exported, thus—By railways, 18,423 tons; shipped to Ireland, 6303 tons; shipped coastwise, 6403 tons. Of the total quantity imported into Glasgow, 17,489 tons were flour. Of this, 10,290 tons were sent to Scotland and England by rail 3864 to Ireland and 2830 coastwise; together, 16,984 tons, or only 500 tons less than the quantity of flour imported.

Greenock is alike convenient for import and export, a preferable point for distribution to Ireland and coastwise, and for a large area in Scotland. Besides, the through charges *via* Greenock, already referred to, being favourable to importers, offer a material inducement to them to establish a new depot at Greenock—not only for a share of the trade hitherto passing *via* Glasgow, but for introducing and developing Indian and Californian supplies, still shut out by prejudice from the Clyde, but in favour in Ireland, to which Greenock is the nearest point.

New municipal buildings have just been erected in Greenock, at the cost of about £126,000.

Renfrew.

The main industry in this town is shipbuilding, as carried on by Messrs Simons & Co. and Messrs Lobnitz & Co., both of which are old-established firms. The latter represent the old

firm of Barr & Macnab, who migrated from Paisley and located themselves at Renfrew about the year 1840. Messrs Simons & Co.'s firm have been in existence since 1816. The father of the present Mr Simons built for the British Government the war fleet which fought the Americans on Lake Champion under Sir George Prevost. The works of the firm extend over 15 acres of ground, and they include all the departments necessary in producing a complete steamship. They manufacture their own engines, boilers, and machinery, and it is customary to launch the vessels with those fitted on board, which enables them sometimes to get a trial of the machinery the same day that the vessel takes the water. In all, 250 vessels, of varied dimensions and form, have now been built by them. This firm has had considerable experience in the construction of dredging vessels, to which they have devoted special attention, and several important patents have been taken out by them in connection with this class of vessel. Among these may be mentioned the hopper dredger, an invention, that is, to a great extent, superseding the ordinary dredger. They have supplied dredgers to almost all the leading ports and harbours in the country, besides many others for foreign and colonial ports. Three of the most powerful dredgers and nine of the steam hopper barges, at present working on the Clyde, were constructed by them, besides a diving bell, and a steam ferry for horse and carriage traffic. They built the first 4-screw steam ferry "Oxton" for carriage traffic on the Mersey, and have lately constructed two steam sewage barges for conveying the refuse of the city of Liverpool out to sea. These barges do their work very satisfactorily. The elevating ferry steamer, to suit the rise and fall of the tide, was also invented by the firm; while the s.s. "India," 2500 tons, built by them, was the first vessel fitted with compound engines for the North Atlantic trade. During the four years, 1863-67, they turned out 20 screw steamers, 8 paddle, 1 hopper dredger, 3 ordinary dredgers, and 1 sailing ship. These 33 vessels represented a gross tonnage of 12,920, having 189,475 horse power. During the four years, 1879-83, their output comprised 13 screw steamers, 10 hopper dredgers, 3 ordinary dredgers, making a total of 26 vessels, whose gross tonnage was 12,663, and horse power 126,225. The average number of employees during both periods was 900.

Messrs Lobnitz & Co.'s establishment is also very large and important. For the five years following 1878 their output was as follows:—In 1879, 1550 tons; in 1880, 2730; in 1881, 10,870; in 1882, 7648; and in 1883, 6662. The following is the aggregate output in this burgh at various periods:—In 1869, 6079 tons; in 1879, 6700; and in 1883, 13,448.

The only other noticeable industry carried on here is muslin weaving at the Moorpark Factory, where Messrs George Wilson & Co. have 270 power looms at work. Each loom turns out daily a piece of cloth averaging 75 yards long, and from 34 to 36 inches wide. This factory, under the present firm and their predecessors, has been going for fourteen years, employing constantly about 130 people.

The Burgh of Renfrew census returns, and valuation in different years, were as follows:—

Year.	Population.	Valuation.	
		Year.	Amount.
1861, . . .	3238 . . .	1859-60	£6,137 .
1871, . . .	4162 . . .	1871-72	8,436
1881, . . .	4825 . . .	1885-86	22,145

Its corporation revenue in 1884-85 was £4391, and its harbour revenue £455.

Johnstone.

This busy growing town was so lately as 1783 inhabited by only ten persons. Shortly after that year, however, a trade in cotton-spinning sprang up, and extended so rapidly that about the year 1830 there were fourteen cotton mills in the village and its vicinity, and a population of nearly 4000. Cotton-spinning is, however, not now the staple industry of the town. It has diminished during the past twenty years. The main sources of revenue are its iron-working and thread-making establishments. At present it contains ten engine and tool-making shops, also three iron foundries, and one boiler shop. These employ an aggregate of 900 people, mostly skilled mechanics. A quarter of a century ago, the workmen in the various shops together did not exceed 250.

Among the articles turned out of these establishments are machine tools for engineers and shipbuilders, sawmill and wood working machinery, hydraulic and printing machines, &c. One of the most prominent firms in town is that of John M'Dowall & Sons, Walkinshaw Foundry. The business carried on by this firm is now over sixty years old. At first iron-founding and boiler-making was their chief occupation, but for many years they have devoted their attention mainly to wood-working machinery. In this department they have gained a wide reputation, their produce having found its way into Government sawmills, as well as the arsenals and dockyards of foreign countries. For their display of sawing, planing, moulding, and dovetailing machinery, &c., they received a gold medal of the first

class at the Forestry Exhibition two years ago in Edinburgh, and also medals at the Sydney International Exhibition in 1880 and the Indian Akolar Exhibition in 1868. Their turn out averages 200 machines yearly, valued at £30,000; and the present working staff numbers 170, as compared with 60 some twenty-five years ago.

The flax mill of Messrs Finlayson, Bousefield, & Co. is one of the largest factories of the kind in the country. The works have been expanded to twelve times their original size, and now employ 2500 workers, or about five times the number required some thirty years ago.

According to the Board of Trade returns, the trade of the burgh has doubled within the past twelve years; while the census statistics exhibit a substantial increase of population, thus—

Year.	Population.
1821,	2304
1861,	6404
1871,	7536
1881,	9267

Paisley.

Though founded in the reign of King Malcolm IV. (1163), this royal burgh was long in acquiring the dimensions or importance of a town.

In 1710 it consisted only of one street and a few lanes, while its population did not exceed 1500. The Revolution of 1688 brought new life and a growing trade to the town, and the art of weaving all kinds of textile fabrics quickly increased. It was plunged into deep distress by the failure of the fancy trade some thirty years ago; but this caused its inhabitants to embark in other industries, the success of which has surpassed all expectation, and placed the burgh in a state of greater prosperity than ever.

At present Paisley contains about 1200 handlooms, 700 of which are engaged in skirtings, winceys, and dress goods. About 300 more are engaged in the manufacture of grey goods, curtains, &c., and about 200 in tapestry, shawls, stays, and other fabrics. Power-loom weaving is also carried on to some extent within its confines. This branch of the industry began about twenty-five years ago. At the Underwood Factory, Messrs R. P. Kerr & Co. have between 500 and 600 looms at work on tapestry and winceys. Messrs George Wilson & Co.'s factory contains 500 looms producing muslins, and two other firms have 550 looms between them weaving winceys. Power-loom weaving is also prosecuted to some extent.

The manufacture of thread is extensively carried on. It dates back to the beginning of last century, when it was begun on a

very small and unpretentious scale, and its progress has been such as to secure for Paisley the distinction of being the chief seat of this industry in Britain. At first the material used was flax, but about the beginning of the century the superior sewing qualities of cotton thread were discovered, and the foundation of the present extensive industry was commenced. At present there are three large firms in the burgh engaged in the manufacture of sewing cotton. These are Messrs Clark & Co., Messrs J. & P. Coats, and Messrs R. P. Kerr & Co.

Messrs Clark & Co's works, called the Anchor Thread Mills, have from time to time been reconstructed and enlarged till now they include five or six large factories. One of the largest of these contains 71,000 spindles, which are driven by engines of 1300 horse-power. A still larger factory, called the "Pacific," has 80,000 spindles, and engines of 17,000 horse-power. Some twenty-five years ago the number of spindles at work in Messrs Clark's establishment was 20,000. In 1868 they increased to 55,000, and in 1872 to 124,000. Now they amount to the extraordinary number of 230,000. Fifty years ago the hands employed by the firm numbered about 150; their working staff now numbers over 3400, whose united fortnightly wages amount to about £4000. The annual output is something like 4500 tons of finished material (thread on spools). For bleaching, dyeing, spool and box-making, &c., they have all the necessary facilities within themselves. They use annually between six and seven thousand tons of birch wood for bobbins, besides being large importers of the finished article; and it is a curious fact in connection with the division of labour and improvements on machinery that, when the Messrs Clark started business, bobbins cost 6s. per gross, whereas now a better description can be had for 8d. or 9d. For boxes for packing their finished goods, 10 tons of cardboard are required each month.

The factory carried on by Messrs Coats at Ferguslie is equally complete, and nearly as extensive. Both firms, it may be mentioned, have large branch establishments in America, in each of which about 2000 hands are employed.

In 1872 the cotton thread exported from Paisley weighed 8,043,856 lbs., and was valued at £1,400,243. At present the total value of the thread made in town will reach £9,000,000 annually. In 1837 its annual value was only £100,000.

In 1812 the total number of hands engaged in the cotton thread industry of Paisley was 120. In 1861 the number returned was 1721; in 1881 they had increased to 3477; while now they may safely be estimated at over 6000. These are mostly females, 14 years of age and upwards, working on the piece-work system, and earning from 6s. to 15s. per week.

Another industry extensively pursued in Paisley is dyeing. This business, which is over 100 years old, has during the last quarter of a century made considerable progress. The number of large firms in existence at present is twenty-two, as compared with fifteen in the year 1860. One of the principal dyeworks in the town is that carried on by Messrs Leckie and Macgregor; and the following account of the business done by that firm will convey some idea of the progress of this industry. Within the last twenty-five years their works have much more than doubled in size, and now cover a large area of ground. Last year they employed about 70 operative dyers, exclusive of 5 foremen; and in addition to that, about 50 other hands, comprising boys, labourers, tradesmen, warehousemen, &c. The weekly expenditure in wages varies from £90 to £130, according to the pressure of work. In 1860 only 59 dyers were employed, 50 men and boys and 10 foremen—in all 119 hands—receiving wages to the amount of £79 per week. A dyer then was paid at the rate of 3s. 4d. per day, whereas his daily wages now are 4s. 6d.

Messrs Leckie & Macgregor's overturn of goods in 1884 was nearly 700,000 lbs., varying from 30,000 lbs. in February to 80,000 lbs. in June. In 1860 the output was not much more than half the above, but their profit was more satisfactory. When trade is brisk the total number of workers employed is as follows:—

	Employees.
Ribbon and garment dyers,	100
Yarn and cloth do.	450
Additional dyework hands,	200
Messrs Clark's employees,	130
Messrs Coats' do.,	160
Total,	<hr/> 1040

In 1822 there were 50 dyers in the town, and in 1837 these had increased to 500.

Another notable Paisley industry is the manufacture of starch, which originated some forty or fifty years ago. Eight firms are at present engaged in it, as compared with four twenty-five years ago; and the premises of all the older firms have greatly extended during that time. The Glenfield Starch Works, which have been in existence for nearly fifty years, are now six times as large as they were a quarter of a century ago. The goods turned out from them are starch, corn flour, and feeding meal. These three products are constituents of Indian corn, which is the staple article used in Paisley Starch Works, but Messrs Wotherspoon & Co.'s speciality called Glenfield Starch is made from sago. Steam is now much more extensively used in the process than it was twenty-five

years ago, so that manual labour has not increased at a corresponding rate to the output. At Glenfield the working staff in 1842 numbered little over half a dozen; in 1860 about 100, now there are 150. The annual output some thirty years ago was about 1000 tons, as compared with 5000 tons now. The total number of employees in all the Paisley starch works together is at present about 600, and the total yearly produce something like 31,000 tons.

Engineering, ironfoundries, and shipbuilding also hold a prominent place among the numerous industrial institutions of the town. There are at present thirty engineering and ironworking firms, nine of which have started within the last twenty-five years. Among the works executed are mill and marine machinery, steam bridges, gaswork fittings, iron roofing, &c. In 1861 there were 335 engineers and ironworkers in town, in 1881 these had increased to 864.

The shipbuilding trade of Paisley twenty-five years ago seems to have been unimportant. Some fifty artisans carried it on. In 1881 there were 412 shipbuilding operatives employed. In 1868 the turnout from the several shipbuilding yards did not much exceed 1500 tons. The following is a statement of five years' produce:—

Years.						Tons.
1879,	.	.	.	.	.	5,859
1880,	.	.	.	.	.	10,427
1881,	.	.	.	.	.	13,899
1882,	.	.	.	.	.	11,725
1883,	.	.	.	.	.	11,364

In this connection we may mention that arrangements have just been completed for the construction of an extensive harbour at Paisley. The Cart Navigation Trustees have accepted the offer of Mr John Mackie, Edinburgh, to form a harbour and deepen the Cart to the depth of 18 feet from the harbour to the entrance, and also to straiten the river by removing two small islands. The work, which is to cost £68,000, is to be commenced immediately, and finished in three years. The harbour will be 111 feet long and 600 feet wide, and will, doubtless, be a valuable acquisition to the town.

Among other trades carried on are soap-making, timber-dealing, fireclay brick-making, and tanning, all of which have participated in the industrial progress of the past twenty-five years. The following statistics give the population of the burgh at different periods:—

Year.	Population.	Year.	Population.
1781, . .	16,000.	1861, . .	47,406
1811, . .	29,541.	1871, . .	48,258
1831, . .	31,460.	1881, . .	55,627

In respect of valuation the town has increased by leaps and bounds since 1860. In that year its valuation was £101,952; in 1871-72, £134,460; in 1882-83, £216,957; and 1886-87, £232,330. The town has for many years ranked fifth among the eight principal towns in Scotland as regards size.

Other Towns and Villages.

The principal of these are Pollokshaws, Barrhead, Thornliebank, Neilston, and Busby, all of which are situated in the eastern district of the county. The chief industrial concerns carried on in and around these towns are bleachworks and calico-printing establishments. The vicinity to such manufacturing towns as Paisley and Glasgow, combined with the good supply of water afforded by the various streams, has made this part of Renfrewshire notable for bleaching and calico-printing.

Bleaching in this county dates back to the middle of last century. Operations were then carried on in the open air, the cloth being spread on fields adjoining the White Cart and the Espedair. In 1812 Mr Wilson reports that there were fifty-six bleachfields in the county, and that they almost universally followed the newest and shortest process by preparing bleaching powder or bleaching liquor, and thus carried on most of the work indoors. In the year 1857 they had decreased to twenty-nine, and at present they are only about eighteen in number, including one or two scouring establishments. This certainly indicates a diminution of trade, but not so great as the figures by themselves imply, as the works of the present time are larger than those of former days, and owing to improved machinery and methods are able to turn out a much greater quantity of work. The produce comprises shirtings, costumes, angolas, and other woollen stuffs, as well as lace curtains, muslins, prints, and cotton fabrics generally. The bleachwork carried on by Messrs John Macnab & Co. at Midtown is an old established and successful institution. Its extent is now double what it was twenty-five years ago, and twelve times as large as it was fifty years ago; whereas at the last mentioned period there were only two sets of beetles at work in the establishment, the firm now find employment for one hundred sets. Twenty-five years ago, four boilers, requiring 12 tons of coal per day, sufficed for driving the machinery; just now there are seven boilers, requiring 30 tons of coal daily. About the year 1860 the firm employed 100 hands, but they now have 200, and this increase of hands would be much greater but for the economy of labour effected by improved machinery and other inventions in the bleaching art. Proof of this latter is amply supplied by the fact that at Newlandsfield, Pollokshaws, in another class of

goods, 250 hands are now able to turn out more work than 400 could have done at one time.

One of the earliest works in Scotland for printing linens and cottons was established at Pollokshaws some time previous to 1770. About that year the same business was commenced at Barrhead, and in 1773 at Ferneze, in the parish of Neilston. This was followed by the establishment of works at Thornliebank, and this again, about the beginning of the present century, by the erection of the Lochar Print Works at Bridge of Weir. With the exception of Pollokshaws, all these works are carried on to the present day. There are at present seven print-works in operation in the county. The most important of these factories is that of Messrs Crum, Ewing, & Co. at Thornliebank. The three branches of bleaching, printing, and dyeing are carried on, employing, when in full operation, between 1200 and 1300 hands. The steam power employed in driving the machinery is about 1400 horse-power, involving the consumption of upwards of 100 tons of coal per day. Some 200 engines of various sizes are in use. The printing machines, forty in number, can produce daily about 50 miles of printed calico, the cloth being about a yard wide. The printing is done from copper cylinders, each colour requiring a separate cylinder. There are about 8000 cylinders in use, forming a mass of copper weighing 400 tons.

The town of Thornliebank is mainly supported by this work. It has increased in population 317 since 1861.

Another large print-work is carried on by Messrs Inglis and Wakefield at Busby. They employ about 700 hands. Their business is done partly on their own behoof, and partly for a Manchester house of exporters. In 1842 the present company acquired the work, which was then of small dimensions. The block method of printing was at first so extensively adopted as to give employment to 400 printers, but it was not of long duration. About 1856 it was largely superseded by cylindrical printing.

The cotton famine in 1862 checked business somewhat; but in consequence of India and Egypt resolving to grow cotton, trade revived and continued brisk till 1874. Having thus increased their printing machines to twenty-two, Messrs Inglis and Wakefield were producing during these years of prosperity 800,000 pieces of printed goods per annum. Since 1874 business with printers generally has been on the wane. Some large establishments have ceased to work full time, and one considerable print-work in this county has entirely collapsed.

The prices of produce have fallen greatly of recent years. As an instance of the depreciation, it may be mentioned that 10d. was a common charge thirty years ago for the bleaching of a piece of goods which must now be done for 3d; and for a class

of goods, now bleaching at 1½d. per piece, 3d. or 4d. was the former cost.

Thirty years ago, work in bleach and print fields was carried on for 12 hours per day and 72 hours per week. For their week's labour men earned 12s, and women 6s. Now the hours of labour have been reduced to 56 per week, and for this the men receive 24s., and the women 9s.

Besides the bleaching and printing industries, cotton-weaving, thread and paper making, and engineering are more or less extensively carried on. Of the three weaving factories at present in operation at Pollokshaws, two have risen within the last quarter of a century. These three works employ at present about 1350 hands. Paper-making is a comparatively new industry. The three establishments engaged in it employ between them about 130 hands. Two engineering shops have also sprung into existence within the last generation, and a turkey-red dyework gives employment to nearly 300 workers.

In the busy village of Neilston, the Crofthead Thread Factory of the Messrs Alexander is an important and useful source of labour, and has of late extended to nearly three times its original dimensions. Various engineering and other industries of considerable importance cluster around the village of Barrhead.

Kilbarchan, a weaving village with 1100 handlooms at work, has remained almost stationary during the past five-and-twenty years. Lochwinnoch, owing to the decline of weaving and cotton-spinning, has decreased in population; while the village of Eaglesham has diminished from the same cause.

Pollokshields, by reason of its popularity as a suburban residence for Glasgow citizens, has grown considerably of recent years. It now comprises over three hundred villas, whereas thirty years ago it had only about three dozen houses. To a similar cause is attributable the development of such populous places as Kinning Park, Crosshill, Strathbungo, &c., quite a cluster of which are to be found in that part of Renfrewshire adjoining Glasgow. Since the Glasgow and South-Western Railway entered Kilmalcolm parish, the village has acquired some reputation as a health resort, and has grown rapidly in population and extent. The neighbouring village of Bridge of Weir, despite its failure some years ago of the cotton-spinning industry, has, on account of its popularity as a country residence, maintained its former population; and the watering village of Gourrock has grown within the last twenty-five years to the dimensions of a town.

The following table gives a comparative view of the population in the villages mentioned:—

	1861.	1881.
Eaglesham,	1769	888
Pollokshaws,	2837	9,363
Thornliebank,	1839	2,156
Barrhead,	6018	7,495
Neilston,	1982	2,311
Pollokshields (excluding part in Lanark- shire),	580	2,104
Kinning Park, . . . . .	...	11,552
Cro-shill, Langside, Mount Florida, } Strathbungo, Shawlands, Polmadie, }	...	14,212
Lochwinnoch,	1910	1,192
Kilbarchan,	2530	2,548
Bridge of Weir, . . . . .	...	1,267
Kilmalcolm, . . . . .	...	1,192
Gourock,	1995	4,068

Cotton-Spinning.

This pursuit at one time ranked prominently among the industries of the county. In 1812 it was carried on in forty-seven separate establishments, employing 23,700 spindles and about 5000 people. During the next forty-five years, however, it decreased nearly one-half, and since then it has been "growing smaller by degrees." There are now only some two or three manufactories in the county.

Mining.

Coal.—As already mentioned, coal* abounds in several districts, and mining operations have been in progress for several centuries. Nearly four hundred years have elapsed since the first shaft was sunk at Hurlet, and the work is still going on. In this neighbourhood four collieries gave employment to from twelve to thirty miners in the year 1812; and the success of the excavations led to a gradual and substantial extension of operations. In 1857 eleven pits yielded good reward for time and labour, while five shafts in this district had ere then been exhausted. In the Johnstone district coal mines have been working for nearly a century. The Quarrelton coal bed, situated here, contains a succession of layers 90 feet in thickness. In 1857 there were six pits in operation, and twelve extinct ones. But this field has become nearly exhausted, and at present there is only one colliery going, viz., the Quarrelton pit, owned by Mr Ludovick Houston. Some time anterior to 1861, mining was commenced on the Blackstone and Walkinshaw estates, near Paisley. In 1876 there were eight coal works going on there, but they have dwindled to three, viz., one at Blackstone, another at Blackstoun, and a third at Inkerman. Coal is also wrought at Jordanhill, Clippens, and at Fulton, near Johnstone,

so that there are at present eleven pits going in the county. In 1872 the Coal Commission estimated the coal supply of Renfrewshire at 25,881,285 tons. Since then it has been drawn upon at something like the rate of 132,954 tons yearly. The value of the total output in 1884 was computed at £27,389.

Ironstone.—This mineral was wrought to a very small extent at Blackhall, near Paisley, ninety years ago; and about the year 1827 it was worked at Hurlet, but not on an extensive scale until about the year 1854, when Messrs Merry & Cunningham began their extensive operations in the Johnstone district. In the year 1857 there were fourteen ironstone pits in operation about Linwood and Clippens. In 1861 Messrs Robert Addie and Sons opened three new pits in Inchinnan parish, which, however, are now exhausted. This mineral was also extensively wrought at Jordanhill, and much of it has been taken from seams at Pollokshields, Hurlet, Walkinshaw, &c. There are at present ten ironstone mines in operation, viz., five in the Paisley district, two near Johnstone, two at Jordanhill, and one at Hurlet. As much as 207,316 tons were excavated in 1884, yielding a gross value of £88,109.

Limestone and Sandstone.—Limestone is obtained by mining at Howrood, in Lochwinnoch parish. It is also found at Darnley and Arden, in Eastwood parish, where it is both quarried and mined. The lime produced at the latter places is well known as an excellent cement. The sandstone wrought near the beginning of the century at Nitshill appears to have many years ago become exhausted. The chief quarries are now at Griffnock, a few miles eastward of this point. These quarries have for long been in the possession of Messrs Baird & Stevenson, who employ in them upwards of 500 men. The stone obtained is excellent building material, and is widely used in Glasgow and other western districts. The total quantity of sandstone unearthed in Renfrewshire during the year 1885 amounted to 23,500 tons.

Pyrites and Aluminous Schist.—The coal bed at Hurlet contains valuable veins both of pyrites and aluminous schist. Works for the manufacture of alum and copperas have been in operation at Hurlet for over ninety years. The best days of this industry are over, the minerals required for it being now nearly exhausted. Only some 314 tons of these minerals were quarried during the year 1884, which were valued at £150.

Shale.—A mineral abundantly found in the Paisley and Johnstone districts is shale. When Mr Young's patent expired about twenty years ago, the manufacture of paraffin and other products of the shale was taken up by several mining companies. At present there are four firms engaged in the business, viz., the Walkinshaw Oil Company; the Clippens Oil Company;

Allan, Craig, & Sons; and William Black & Sons. The shale is rich in oil, yielding 40 gallons per ton of crude, but it is poorer in ammonia than the eastern shales. In 1884, 97,273 tons of oil shale were unearthed, representing a gross value of £26,750.

The number of miners employed in 1861 and in 1881 was as follows:—

	1861.	1881.
Ironstone miners,	1065	846
Coal do.,	610	586
Shale do., . . . . .	..	108
Miners, undefined,	93	30
Stone quarriers,	446	459
Totals,	2214	2029

ON THE MOST EFFICIENT MODE OF FACILITATING THE COLLECTION OF HERRINGS AND OTHER FISH FROM THE SMALLER STATIONS OF THE WEST COAST.

By WILLIAM WATT, 27 North Albert Street, Aberdeen.

[*Premium—Five Sovereigns.*]

ONE of the reasons why the fishing industry is so little developed on the western side of Scotland is to be found in the remoteness of the stations from the great centres of consumption, and the consequent difficulty, under existing arrangements, in getting the fish delivered in the markets with sufficient rapidity. Until within recent years the fishing trade of the West Highlands was confined almost entirely to the exportation of cured or salted fish, most of which went to the Baltic, for consumption in Russia and Germany. Since the opening of the railways to Strone Ferry and Oban, however, a considerable trade in fresh herrings has been established, and latterly a promising beginning has been made by the Highland Fisheries Company, in developing the resources of this hitherto almost neglected portion of the British marine area as regards all kinds of white fish.

In the first weeks of 1886 numerous trains of fresh herrings passed along the Highland Railway from Wick and the Moray Firth on their way to London, Manchester, Leeds, and similar destinations; and the Firth of Clyde and neighbouring waters contribute, during several months of the year, a substantial quota to the supply of Glasgow, Liverpool, and other towns. The fresh fish trade is greatly dependent on railway facilities. Many fishing stations on the British coasts have risen to prosperity on the construction of a railway bringing them into

communication with places where their produce could be readily and profitably disposed of; while other fishing stations, less favourably situated in this respect, have decayed, and had their trade and population absorbed in the nearest port having direct access by railway to the seats of industrial activity.

In the waters of the West Highlands and the Hebrides the prodigality of nature is amply manifest. Herrings, cod, ling, mackerel, and various other fishes are to be met with in extreme abundance. The quantities caught and cured, even in the present undeveloped state of the fisheries, amount to a very considerable aggregate; and at the railway termini at Strome and Oban the fish traffic is far from small, though it does not reach one tithe of what ought to be its dimensions at these two points, where all the consignments from the Hebrides for quick overland carriage are put ashore. Two landing-places, with railway accommodation, are, however, miserably disproportioned to the requirements of such an extensive area of the most prolific fishing ground, dotted with islands, and within easy reach of the mainland. If a third railway line were constructed to Arisaig, in accordance with the prospect temporarily held out some years ago, the gain to Hebridean and west coast fishery interests would be very great. And in these days of light railways, why should the populous island of Lewis be permanently debarred from the advantages of transit by their means? It is probable that the ultimate solution of the problem of subsistence in the West Highlands will be found, largely or mainly, in the systematic and properly organised quest of the unlimited wealth of the seas; but before this solution can be fully realised, there must be a radical improvement in the mechanical conditions and facilities contributing to the success of the fishery enterprise. Better boats and gear are required, especially larger boats; but not less essential are the increase and improvement of harbours, and the ampler development of the means of communication and transit. We live in an age of rapid movement, and whenever the West Highlands are brought into the circulation of traffic, according to modern conditions, their fisheries will become a new and inexhaustible source of prosperity to themselves and of benefit to the whole nation. Without these mechanical advantages, there can be little real progress; the fisheries must continue to languish under difficulties and drawbacks, and the natural riches of the region to be only very partially turned to account.

More than in almost any other department of commerce is rapidity of transit necessary in the fresh fish trade. Means there are, no doubt, by which the processes of natural decay can be retarded; but the application of preservative agencies,

whatever their character, is attended by cost and outlay; and every agency serving to bring the fishing grounds within easier reach of the markets is a boon and help to the fishing industry. Railway charges may not always remain at their present exorbitant level, but distance alone will, nevertheless, continue to make it desirable that the cost of handling West Highland fish should be kept at a minimum, and that superadded burdens should, as far as possible, be avoided. Ice-packing has been found to answer remarkably well in the Kinsale mackerel trade, but as matters stand at present, the West Highland fisheries are not sufficiently concentrated within a given area to be easily worked after the manner of the south of Ireland traffic with Milford or the Bristol Channel. Last year, for instance, there were ten steamers employed in conveying fish from Kinsale to England, and seven hulks for storing ice.* There the trade is brought to a focus, and the transport easily and economically carried out. Where the route is to a large extent over-sea, the additional weight of ice is less important than where railways have to be entirely depended upon. But though the Hebridean fisheries require organisation and development, their case is not hopeless. Greenock, Stranraer, Sillioth, Barrow, and Liverpool might easily be made the entrepôts of a large volume of traffic.

Reference has been made to the importance of railways to the West Highlands, but a great extension of steamboat communication is still more vital to the organisation and development of the fisheries of that part of the country. This in turn would necessitate considerable outlays on harbours, piers, and landing-places. Steam fishing-vessels were strongly advocated by the late Mr Joseph Mitchell, who was for many years engineer to the Fishery Board, in his evidence before the Herring Fishery Commission. His views on this matter have not as yet met with general acceptance to the extent of being carried into practice, but undoubtedly there are strong considerations in their favour as regards the circumstances under which the west coast fishing has to be carried on. Except in the "fjords" or "sea-lochs," and in other sheltered situations, the "swell of the Atlantic," accentuated by local meteorological disturbance, however moderate, is inimical to the regular prosecution of fishing operations in the ordinary craft of the Scottish coasts. A comparatively large, strong, and well-found vessel, propelled by steam power, is far less dependent upon the weather, and has a much greater choice of fishing grounds than the best of the ordinary boats. It has less loss of time, and is able to deliver its fish with rapidity and regularity, a matter of

* Report of the Inspectors of Irish Fisheries of 1885

the greatest possible importance with reference to the supply of the fresh markets.

One mode of collecting takes of fish, which is in extensive and successful operation in the North Sea, is known as the "fleeting" system. Under this system the fishing vessels of a particular owner or company remain at sea for, it may be, several weeks at a time. They work near each other in a group or "fleet," under the command of an "admiral," and are relieved of their produce, and furnished with supplies by steam carriers, which are constantly plying between the fleet and the land. This system, however, is not well suited to the conditions prevailing on the west coast, where it is much more convenient for the fishing vessels to come frequently to the shore than it is to journey to and from the more distant parts of the open North Sea. On the west coast we have the advantages of an archipelago, with great stretches of sea in proximity either to the mainland or to some island of the Inner or Outer Hebrides. The multiplication of fishing stations is possible and advantageous in such a situation, and the development of the West Highland fisheries will in all probability be based on existing villages, in the first instance, especially those having facilities for the landing and easy shipment of fish.

The Grimsby cod smack is a type of vessel well suited for the West Highlands, and, in point of fact, is often to be met with at Rockall, about 300 miles west of the Outer Hebrides. The Yarmouth lugger and the Shetland yawl are also good seaworthy craft. Great advantage, however, would result from the use of steam as an auxiliary. All these types involve the necessity of harbour accommodation of a rather more pretentious kind than would suffice for the small boats that serve for fishing within an easy distance from the shore. But whatever may be the type theoretically or practically the best, we have to recognise and deal with the fact that Scottish fishermen already possess over fifteen thousand fishing boats. About one-third of this number are classified as first class boats, having 30 feet of keel and upwards; nearly a-third are second class, with from 18 to 30 feet of keel; and more than a-third are third class, having less than 18 feet of keel. The tonnage of these boats altogether is 130,000 tons, of which 95,000 tons, or about three-fourths, is of the first class measurement, 21,500 of the second class, and 13,500 of the third. But when we go to the West Highlands and Hebrides a very different order of things presents itself. The numbers and tonnage of the fishing boats registered at the several stations in the counties of Argyll, Inverness, and Ross, excluding the Moray Firth side of the two latter counties, according to the last Report of the Fishery Board, are as follows:—

	Boats.	Tons.
First class,	418	6592
Second class,	1727	9216
Third class,	2816	7077
Total,	4961	21,885

Approximately, therefore, one-third of the number, but only one-sixth of the tonnage, of the Scottish fishing boats belong to the Hebrides and West Highlands. One-half of the third class, or smallest boats, belong to these stations; but only about a fifteenth part of the first class tonnage appertains to them.

These facts have an important bearing on the matter under consideration. The west coast fishing, except in so far as it is in the hands of strangers, is to a very large extent carried on in small-sized boats. The boats, no doubt, answer pretty well in comparatively sheltered waters, and in fair weather within a short distance from the land; and they suit localities where there is not depth sufficient for larger craft. Such localities, however, are obviously unsuited for fishing stations. For one thing, they do not afford the requisite facilities for shipment. Stranger boats will, of course, only frequent such ports as have depth of water and practicable landing-places, and as can be approached by steamers for the purpose of taking up cargo. How largely the fishing industry of the west coast is carried on by capital, boats, and fishermen from a distance is shown by the official statistics. Stranger boats from the east coast, from Cornwall, from Ireland, and from the Isle of Man repair in the spring to Barra or Stornoway for the herring fishing, or later in the year, when great shoals swarm in Loch Hourn or other arms of the sea. In competition with the well-equipped strangers, the vast majority of the local boats have but a poor chance. The enormous extension, which the east coast fishery has undergone within the last quarter of a century, has been due to the increase in the size of boats more than to any other cause; and, reasoning by analogy, we may fairly conclude that the development of the west coast fishery will be preceded and accompanied by a similar replacement of small by larger and more seaworthy boats.

This brings us back again to the question of harbour accommodation, which, so far as our present purpose is concerned, may be disposed of without entering at any length upon the discussion which its importance invites. It was to a certain extent investigated by the Crofters' Commissioners, and comes within the scope of their recommendations.

The lochs and natural harbours that are so numerous on the west coast and among the islands dispense in many cases with all necessity for costly works. Piers and landing-stages are

requisite, but they need not be of such a character as would be required in order to insure durability in exposed situations. There are, however, considerable stretches of coast-line, where more pretentious structures are needed for purposes of shelter and the establishment of commercial relations—two conditions essential to the effective prosecution of the fishery. The suitability of particular sites depends on a variety of local and other circumstances, and especially on the financial powers that may be available. The Crofters' Commission recommended that, in addition to the tidal harbour in course of erection at the port of Ness, near the Butt of Lewis, a similar place of shelter should be constructed between Ness and Stornoway; while one or two harbours of a like character should be formed at suitable points on the western side of the island, and others at Talmin and Port Skerry on the north coast of Sutherland, at Staffin Bay on the north-east side of Skye, and at the island of Tiree. The principle upon which fishing-stations should be formed—and it is a principle to which the natural course of things will tend to conform—is that of convenience as regards proximity to the fishing-grounds and ready accessibility—first, to boats requiring shelter; and, secondly, to trading vessels for the landing and loading of goods. It is undesirable that stations should be too numerous. One large place in a district is better in many ways than half a dozen small. Concentration, within limits, conduces to thrift, as regards both curing and commerce; it saves time and cost of carriage, and greatly facilitates active commercial relations with the sea-ports and markets of the south. Only from places of some importance, in outlying districts, can there be a reasonable hope of such rapidity and regularity of transmission as are essential to a well-organised and profitable trade in fresh or "wet" fish. Therefore, if speculative views as to the expansion of the fishing industry to proportions in some degree commensurate with what appear to be the natural possibilities and opportunities in the Highlands are to be all fully realised, it ought to be kept in mind as a principle of action that too many fishing stations are almost as great a hindrance to progress as too few. The point may be illustrated from experience and the course of events on the east coast. Along the whole north-east of Scotland, the herring fishing and all curing operations on a great scale are being more and more drawn from the smaller to the larger places. The decline of the fishing villages on the Kincardineshire coast, notwithstanding that they have the advantage of a line of railway passing them in close proximity, is indeed a very significant fact.

Modern conditions, then, are opposed to a too great multiplication of centres for the carrying on of this industry. A moderate number of such centres, and these well equipped and

readily accessible from the sea, as also commodious enough for their traffic, offer the best prospect of remunerative working. To these well-equipped, commodious, and accessible centres the population and business of the smaller places must gravitate. We have seen that this happens when a particular fishing port receives the advantage of railway communication which does not reach its neighbours. But we have seen also that it happens in Kincardineshire, where most of the fishing stations are on something like a parity as regards the railway. And the common experience will doubtless be exemplified anew whenever a great start on the path of progress takes place on the west coast. It does not follow that there will be a general extinction of the smaller stations, but only that there will be a tendency to congregate at the most convenient places. The proposals of the Commissioners certainly do not err on the side of excess, and though the places they recommend as suitable sites for harbours are all at least feasible, it could be easy to add very considerably to the list and to make out a fair case for each addition. The vexed question of the ways and means by which the requisite piers, harbours, and breakwaters are to be constructed cannot be summarily disposed of, and its full discussion would carry us beyond the limits of our subject. In a general way, it may be affirmed that minor works, such as landing-stages and a certain class of piers, should be provided by the localities which they are to benefit; whereas breakwaters and artificial harbours, if they are to be constructed at all, must be formed to the extent of a large proportion of their cost by means of national resources. Great advantage has been conferred on the Scottish fisheries through the judicious application to the construction of works of this kind of the modest sum administered by the Fishery Board; and it is much to be desired that the principle should be extended, and means provided for meeting within a reasonably early period some of the more urgent requirements of the West Highlands and Islands, where the industry of the fishermen, though capable of almost limitless development, is restrained and crippled by the want of some of the conditions essential to its being advantageously carried on. The strength of the claim for Government co-operation in certain cases is enforced by the Crofters' Commission on the special ground that the works would be mainly for the benefit of a branch of imperial industry, and for the accommodation of fishermen from a distance who have only a transitory connection with the place, but to the prosecution of whose business the works in question are nevertheless indispensable. Of this, however, we may be sure, that where the assistance of the Government has to be relied on, even were the resources for harbour construction at the disposal of the Fishery

Board to be supplemented to a material extent, there will be little risk of an excess of harbours being created for a long time to come.

A main object to aim at as a means of facilitating the collection of fish from the smaller stations of the west coast would be so to organise the fisheries that the stations should neither be too many nor too small. To a great extent the direction of policy to this end rests with the curers and buyers. A curing establishment, or the presence of one or two buyers and consignees of fish at a place, contributes greatly to its importance as a centre from which the fishing is prosecuted. And in proportion as the west coast stations come to participate in the fresh fish trade will the capitalists concerned in that trade provide for the delivery by the fishermen of their takes at points from whence they can be conveniently shipped. The operation of the principle is seen in the curing trade in a somewhat extreme form, because the fleets of boats from a distance can be accommodated only at a few places, and the curer, whose connection with the west coast may be limited to a few weeks in each year, resorts by preference to places of some commercial importance.

Large concerns like the Highland Fisheries Company can afford to run their own steamers, and may be largely instrumental, both directly and indirectly, in promoting the industry and prosperity of the west coast; and it would be difficult to overrate the benefits that have been derived from the Hutcheson and Macbrayne steamboat service. But for the full development of local resources, more especially as regards the fishing, it is desirable that the fast mail steamers should be supplemented by smaller vessels for collecting the traffic of the minor places, and bringing it to the ports of call, where it can be transhipped without loss of time. An excellent example of this mode of dealing with local traffic under somewhat similar conditions is seen at Shetland, where it has stood the test of many years' experience, and is found to work remarkably well. The large steamers of the North of Scotland and Orkney and Shetland Steam Navigation Company arrive at Lerwick or Scalloway every second or third day; and the traffic is greatly facilitated by a small steamer which receives from them all goods consigned to the North Isles, and brings back just in time for reshipment all the cargo consigned from those isles to Aberdeen, Leith, Hull, or London. A great deal of time is thus saved, and the traffic is carried on in a thoroughly efficient and economical manner. Were the large steamers to go the round of the islands, the celerity and regularity of the service would be at an end, and at a heavy cost the work would be done clumsily which, under the existing arrangement, is swiftly and

easily accomplished. Much of the traffic of the Hebrides and the west coast is efficiently worked, but still there is room for expansion in accordance with the method so well exemplified in Shetland; and as attention to the fish traffic increases, the necessity for dealing with it on this plan will become more and more apparent. There are regular steamer services between the Hebrides and Glasgow and Liverpool, and also between the Hebrides and Aberdeen and Leith. These lines of steamers might be utilised to a far greater extent for the fish traffic, especially if that of the smaller places were collected for them in the manner just described. And with increase of traffic the steamboat communication would be further improved. Then there are the railways. The same principle of collection might be further developed in relation to these great arteries of internal communication. Strome Ferry has its daily steamers from Portree and Stornoway, and Oban from Tobermory and Fort William, while the Southern Hebrides have from some of these ports an equally intimate connection with Glasgow. But there is ample scope for an extended local traffic by steamboat from places within a moderate distance of the two railway termini, and for the collection of cargo for shipment at such ports as Stornoway, Tobermory, and Port Ellen. Other places are called at by steamers every second or third day, others weekly, and others only in alternate weeks. These intervals do not suit the fish traffic. Were the fishing pursued with energy from the various situations along the shores of the Minch, the produce must be conveyed to such depôts as Stornoway, Portree, and Strome. At present the whole range of coast from Wester Ross to Cape Wrath is nearly unoccupied, with few exceptions, so far as the fishing industry is concerned. The growth of the industry, and the increase of facilities for the transmission of its produce, will go hand in hand. The one must accompany and foster the other. Facilities for the carriage of goods by sea cannot greatly exceed the requirements of the trade; and, on the other hand, the development of trade must call into existence the requisite means of conveyance. There is no royal road in the matter, and all that is here attempted is to indicate the general lines of progress. The main object to be aimed at is to get capital introduced into the west coast fisheries. But before capital can do much good there must be persevering fishermen, whose attention is not distracted from their proper work by crofting or other occupations by land. There is boundless wealth in the deep, but to turn it to account for human purposes requires the exercise of great energy on the part of all concerned in the industry, whether as practical fishermen or as merchants concerned in collecting the produce and forwarding it to the great markets of the south.

ON THE BEST MEANS OF PREVENTING THE GLUTTING OF MARKETS, AND FACILITATING THE DISTRIBUTION OF HERRING AND OTHER FISH.

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[*Premium—Five Sovereigns.*]

THOUGH it never will be possible to secure anything like evenness in the daily supply of fish from the sea, the tendency, as the fishing industry develops and extends, is towards greater regularity and an abatement of extreme fluctuations. Shoals move hither and thither, and a few vessels, or it may be the entire fleet of a particular district, are unsuccessful; but as all the seas round these islands come to be more completely studded with fishing craft, there is the less chance of any great shoal being missed by the fishermen, and the greater security for a fair average result to the industry viewed as a whole. But so long as shoals continue large and migratory there will be fluctuations in particular localities. In some recent years there has been a prodigious abundance of herrings at Shetland and in Loch Hourn, in other years the fishing is a comparative failure. Cod are largely dependent on the shoals of herrings; haddocks are notoriously nomadic in their habits, and are often difficult to find when they are wanted; and all gregarious fish wander over the expanse of the sea, and if only a few fishermen are at work these few run great risk of having but a poor harvest. In proportion as the number of captors and the quantity of fishing gear are increased, is there a greater probability that the regions of abundance as well as of scarcity will be struck; and were there an efficient method of distribution, the great inland markets would have increased supplies from one port or district as those from another fall off. But at present there is little method and less efficiency in distribution, and the consequence is that the trade is ill-developed, the markets are intermittently supplied, and abundance of fish in a given district produces a glut, with demoralisation of prices, distress, and misery. Thus we have recently seen, in the early months of 1886, the produce of the winter herring fishing at Girvan selling at from eighteenpence to three shillings a basket, as compared with ten, fifteen, or twenty shillings at the corresponding date in former years. On the east coast, as well as in the Firth of Clyde, the winter herring fishing was prosecuted to an extent and with a success surpassing ordinary experience. At the Fifeshire fishing towns enormous quantities were delivered by the fishermen on particular days at the very low price of two shillings per cran. For a time, indeed, the fish were a drug in the market. Unfortun-

ately the prices at the port of landing is no criterion of the cost at which fish can be placed in the English markets. Gluts are of frequent occurrence in the herring and sprat fisheries of Scotland. The fish will not bear the cost of carriage to the southern markets, and have to be sold at nominal prices for manure.

The most obvious way of preventing gluts of this sort would be to cheapen cost of carriage. Railway rates are often quite prohibitory for cheap fish requiring to be sent long distances. Fifty-five shillings per ton by goods train, at sender's risk, or seventy-five shillings by passenger train, from Montrose or Aberdeen to London, is a most onerous charge in relation to the value of fish in times of plethora. A barrel of herrings can be sent to Germany for eighteenpence; to take it from the north of Scotland to Leeds or Birmingham costs from five to ten shillings. The railway companies urge in defence of their high charges that the fish traffic is costly to carry, and that those charges are after all but a small proportion of the price of fish to the consumer. There is often, it is true, a very wide discrepancy between the price of fish on the Scottish wharf and the price of the same fish in the Belgravian kitchen. The fishmonger's profits are great, or would be but for his expenses and risks; but the consigner has to do only with wholesale prices, and in relation to these the railway charges are a much more serious item. In February 1886 a special train left Anstruther with forty-one trucks filled with barrels of herrings to different parts of England—in all, about six hundred crans of fish. The original price of the fish was two shillings a cran, or £60 in all. The cost of conveyance to the English markets was £500, equal to 16s. 8d. a cran, or more than eight times the prime cost of the fish as landed from the boats.* It is preposterous to speak of carriage as unimportant in a case of this kind, for that which the fishermen deliver at two shillings must sell for more than 18s. 8d. before the consigning merchant begins to have any profit. It is an extreme case to be sure, but one that can be paralleled any season, either from actual consignments or from fish lost to all concerned, through the prohibitory operation of the railway tariffs. The winter herring fishing of 1885-6 on the Scottish coasts was unusually productive, yet we have it on the authority of a well-known Billingsgate salesman, Mr John Last Sayer, that in the early part of the season one hundred tons of foreign herrings were being received at that market for every ton coming from Scotland, the sole reason being that the home trade was paralysed by the railway charges. The Swedes and Norwegians were supplying London with fish on which the freight was fifteen shillings a ton, whereas to get

* See *Scotsman* of February 15, 1886; also article by Mr W. D. Johnston, fish-curer, Montrose, in *Montrose Review* of April 9.

the same sort of fish conveyed from Scotland cost seventy-five, and from Ireland eighty, shillings a ton. It is not surprising, in view of such facts, that the markets at our fishing ports should often be glutted. The remedy, so far, is the very simple one of reduction of railway charges. Tonnage rates should be materially lowered, and the charges for small lots should be put on a greatly more liberal scale, so as to encourage a direct trade with the retail dealers in the various distributing centres. The amount of reduction that should be conceded is of course purely a matter of opinion, and it is unnecessary to specify figures. To be of much use, however, the concession must be substantial;—25 or 30 per cent. on the seventy-five shillings rate, and applicable to smalls, would make a vast difference to the trade, and it is not unreasonable to suppose that there would be a compensatory increase of traffic. It is, indeed, as certain as anything can be that were the rates made sufficiently low the fish traffic from Scotland to England would undergo a very great expansion. Access would then be had to many markets, which are at present closed to Scotch fish, and many new markets would be opened in the smaller towns, to the benefit of the inhabitants and of the most promising of our northern industries. The commissioner who was sent down by the London authorities, at the time when the question of supplementing or superseding Billingsgate by another market was under consideration, reported that if lower rates of carriage were given by the railways, the development of the traffic to four or five times its present dimensions might be looked for. "With reduced rates," to quote from the report, "railway companies will no doubt discover what a source of revenue awaits them in the development of this fish traffic by the adoption of a lower and simpler tariff, which would make it pay to bring cod, herrings, haddocks, and other kinds of fish that may be caught in any quantity to the four millions of persons that would be glad to have them." In process of time, it may be hoped, the railways will be managed with more regard to the interests of the public and of their own traffic. Perhaps steamboat competition may yet assist them into more rational ways.

But there are other gluts than those at the fishing ports. Sometimes the inland markets are glutted. The great markets are comparatively very few in number. Consignments flow too much towards main centres, and radiate too little towards the smaller places,—the minor towns, the large villages, the thickly-populated districts. From an intimate knowledge of more than one of the mining and manufacturing districts of England, I can affirm that some years ago—and probably no great change in this respect has taken place—the supply of fresh fish was utterly inadequate, intermittent, and often far from perfect in point of

freshness. In many cases the fish were consigned in the first instance to a great town, and thence passed into the hands of the ultimate distributors, thus reaching the public after considerable loss of time and condition. Under such circumstances, the demand could not be otherwise than restricted. To say nothing of the question of price involved in these repeated handlings, such a cumbrous mode of distribution is quite unsuited to such a perishable commodity as fish, and is calculated to prevent that universal daily consumption which would prevent all glutting of markets, so long as the fishing industry does not enormously exceed its present magnitude.

How much has to be done in the way of providing market accommodation may be partly seen from the state of things in London itself. The Billingsgate monopoly is at once a phenomenon and a scandal. No one who has visited Thames Street early in the morning, and seen how the metropolitan fish trade is carried on, can wonder at the frequent occurrence of gluts. The initial difficulty of getting the fish into the market from the long string of railway vans that occupy the narrow thoroughfare, as well as from the multitudinous craft on the river, the Babel within the precincts of the market—"confusion worse confounded"—the further difficulty of getting the fish out again, and conveyed through the city towards their various destinations: the whole spectacle powerfully impresses the observer with the thought of how miserably bad the arrangements are for the supply of the largest urban community in the world with one of the great staples of its daily food. Nor is it alone by the inconvenience it involves that the Billingsgate monopoly operates prejudicially to the interests of the fishermen and consigners in Scotland and of the inhabitants of London. It is the bulwark of another and equally pernicious monopoly—that of the retail fishmongers, who charge prices altogether out of proportion to the prime cost of the fish and the necessary expenses of transport. No doubt, a considerable part of the fishmonger's great percentage represents the cost and trouble of getting the fish from Billingsgate and conveying it to the house of the customer, with the risk of bad debts and of his fish becoming unseasonable. But excepting the bad debts, these are items for which Billingsgate is responsible. They would to a great extent disappear were a rational system of distribution introduced. Were the supplies more easily obtainable, the number of fishmongers would be far greater, the public convenience would be better served, and prices would be kept by competition within more reasonable bounds, while the risk of gluts and the interests of the consigners would come under the ameliorative effects of the demands of an indefinitely increased circle of consumers. The inadequacy of the existing methods of distribution in London

have long been notorious. Mr Plimsoll * has recorded the results of a tour of exploration through five or six miles of the streets of South London in quest of fish shops. The streets explored were the main thoroughfares between London Bridge, the Elephant and Castle, and the Waterloo, Westminster, and Lambeth Bridges; and the result was that two shops only were discovered in all those streets which sold fish exclusively, and one which combined fish with greengrocery. In some parts of the metropolis the costermonger is the intermediary between Billingsgate and the consumers; but his trade is mainly with the poorer classes, and his fish are not generally very "prime" in kind, or always so in condition. He only mitigates to a slight extent the almost incredible defectiveness of the existing machinery of distribution.

London, with its population of more than four millions, cannot by possibility be properly supplied with fish from one central market. There ought to be half a dozen such markets at the very least, each central for its own great district of the metropolis, and, if possible, immediately connected with or adjacent to the great lines of railway. One such *depôt* might serve for the Great Northern and Midland, whose goods stations meet. The London and North-Western might be relieved of its fish for the most part at some distance from the terminus, say in the region of St John's Wood or Kilburn. Paddington and Waterloo would serve important areas; an outlet from the London Bridge railways would provide for the requirements of the south-eastern districts; and the Columbia Market, which, however, is not fortunately situated in relation to the means of transport, might suffice for the necessities of the teeming population around it. But why should not the Great Eastern Railway Company have a market of its own at Bishopsgate or Shoreditch? And why should it not be able to obtain a share of the Scotch traffic through its Lincolnshire connection with the north? For the river traffic Billingsgate would be serviceable, but time and convenience would be served if the carrying vessels would discharge lower down, say at Shadwell, or, perhaps better still, at Poplar, from whence railway transit could be conveniently obtained. The market buildings need not be expensive structures, but they should be easily accessible. Immediate connection with a railway is a great advantage, though not essential, saving time, and also cost of handling; but with sufficient room to provide an access for vehicles without interrupting traffic or interfering with the comfort of foot passengers, the market might be anywhere. It should be reasonably commodious within, and so arranged that cleanliness

* *Nineteenth Century*, July 1883, p. 156.

can be enforced, order maintained, and the comfort and convenience of retail buyers at the stalls secured.

By this multiplication of markets it is contemplated that wholesale dealing should be carried out in a way suited to the requirements of fish shops, while the markets themselves should be the centre likewise of some portion of the retail trade. For most even of the great towns, one central market would probably suffice. In all cases, however, a cheap and expeditious system of delivery to the shops ought to be organised. In the fish trade, pre-eminently, time is money. Private enterprise could easily provide such a system, only some organisation would be necessary, especially in large and populous areas, together with a tariff-scale that would be no great burden on a retailer carrying on a trade of modest dimensions.

In places too small to have a fish market, there would often be a good opening for a wholesale dealer, and no system of markets ought to prevent direct consignments from the ports of landing to dealers elsewhere, whether wholesale or retail. Very often under the arrangements for refrigeration about to be discussed, the market would be a highly convenient entrepôt, but many dealers are so situated that direct consignment must always suit them best, and hence the importance of reasonable railway rates for the conveyance of small quantities.

The better supply of all markets, great and small, is the true remedy for gluts. One or a few markets may be over-supplied, but the equalisation of supply, and especially its distribution over the widest possible surface, so as to reach all classes and all communities, in short the whole population of these islands, would effectually dissipate any ordinary congestion.

The resources of modern science and invention are also very helpful. It is impossible to estimate the benefit to the fish trade that has resulted from ice-packing. At Grimsby alone the yearly consumpt of ice for fishing vessels and the preservation of fish on land is not less than 50,000 tons; 52,569 tons were imported into the town in 1884. But for ice the great mackerel trade of the south of Ireland could hardly exist; and in Scotland much ice is used in connection with trawling and in the salmon trade. To a certain extent ice-packing is available for preservation through a glut, and by artificial manufacture, as carried on by machinery at the Farringdon Market and at Plymouth,* the cost of ice is reduced to the very moderate amount of 5s. a ton. But the cost of overland conveyance is a serious barrier to the general use of ice, the additional weight involved being often quite prohibitory under the present scale of railway charges.

The question of conveyance has an intimate bearing on gluts,

* Pontifex and Wood's system.

for if fish can be sent to a distant market in good condition, and at a cost not extreme, there is the less probability of nearer markets being overwhelmed and congested when the supplies brought to land are unusually abundant. As an alternative, and in several respects an improvement on ice-packing for railway transport, the use may be recommended for large consignments of Knott's "dry-air system" cars. These cars were exhibited at the Royal Agricultural Society's Show at Kilburn in 1879, when they were awarded the prize and medal offered by the Lord Mayor of London and the Mansion House Committee for the best means of conveying meat, fish, &c., by railway, on a journey of 500 miles, the temperature of the van not to exceed 40° F., and the goods to remain in the van for six days. The first trial consisted of a run to Holyhead and back, and when the van was opened after the goods had remained in it for nine days, no taint or odour could be detected; and on the experiment being repeated, the goods were removed from the van in the same condition of soundness. These cars have been amply tested in the Aberdeen dead-meat trade, and have been worked very satisfactorily during the last two summers in carrying beef from Huntly to the central meat market in London. In the fish trade they have also been employed to some extent, and with similar good results, the contents being delivered after the lapse of four days in a perfectly sound condition. The principle of the car is very simple. By means of ice tanks the temperature is brought down to about 33°, and by the use of a fan or blower the enclosed air, after being purified by passing through animal charcoal, is circulated through the chamber as "cold dry air." There is no refrigeration properly so called, but the temperature is kept very near the freezing point. The cost of the car is only £200, or not much more than that of an ordinary fish truck of similar carrying capacity. For some of these particulars I am indebted to the courtesy of Mr R. D. Burnie, managing director of the Swansea Waggon Company, Limited, by whom the cars are made.

A system of refrigeration, applicable to storage as well as transport, and coming into very extensive use, next claims attention, namely, the Haslam process. The Haslam and Bell-Coleman patents are now combined, the result being the production of refrigerating plant of the most perfect character. It has attained its widest repute in connection with the New Zealand and Australian frozen-meat trades, and it is computed that about 95 per cent. of the vast quantities of dead meat now being received from the antipodes are treated by this process. The Haslam Company's appliances are now in use on board the steamers of the Peninsular and Oriental, Orient, Pacific, British

India, Cunard, Anchor, White Star, Castle, Shaw-Savill, and other ocean lines; and, what more directly concerns our present purpose, they are being adopted to an important extent for the storage of perishable goods by land. In relation to the importation of meat, they have brought about something like a revolution; as regards the fish trade, they have still a great work to accomplish.

The first great trial of the powers of the Haslam refrigerator with fish took place in 1881, when 30 tons of various kinds were shipped by the steamer "Orient" for the commissariat requirements of its outward voyage, with seven hundred persons on board. Complete success attended the experiment, and a change in the conditions of living on board ship on long voyages was thus inaugurated. Shortly afterwards the steamer "Garonne," also of the Orient line, took out some scores of baskets of fresh salmon, soles, and turbot, and of Yarmouth bloaters and Finnan haddocks, for delivery in Australia. Including a large consignment of salmon, there were also about 30 tons included in this experiment, in addition to the quantity for the use of the passengers and crew; and the several parcels were reported to have reached their destination in good condition. These trials and the sudden development to enormous dimensions of the New Zealand frozen-mutton trade completely demonstrated the efficiency of the freezing process for the duration of an ordinary steamship passage to or from the antipodes. A further trial, however, had still to be made. The sailing ship "Mataura" arrived in New Zealand in April 1882, after a voyage of 95 days from this country, and delivered parcels of fish and game from London to merchants and correspondents in Dunedin, Otago, and other New Zealand ports. "In splendid condition" was again the report. On the return voyage the "Mataura" had on board 4000 carcasses of mutton, as well as fish and other fresh provisions, which kept perfectly to the end of a protracted voyage of 102 days. For two months, according to the ship's log, the thermometer every day marked 84° in the shade and 120° in the sun, but even under this temperature those on board had the novelty, as it then was, of having butter for daily use "perfectly cold and hard." In the tropics and in long voyages the powers of the refrigerator in warding off decomposition are subjected to far severer tests than can ever be applied in the home fish trade. A few days, at the utmost, are sufficient for the delivery at any British port of fish caught in any portion of the marine area ordinarily frequented by British fishermen.

The preservation of fresh fish by the dry-air method of the Haslam refrigerator has an important bearing on the gluts at the ports of landing. If fish can be sent from Wick, Fraser-

burgh, or the Hebrides to London or to English ports within a moderate distance of the industrial centres at moderate sea freights, the high charges of the railway companies will only serve to divert traffic from the land to the sea. The practicability of efficient sea conveyance for the fresh fish trade is now beyond question, and enterprise may be expected increasingly to turn this alternative to account.

The best effects of dry-air refrigeration as a preventive of gluts will perhaps be found, however, in its application to purposes of storage. It is now (Oct. 1886) about four years since some of the principal fish merchants in Grimsby began to provide themselves with great air-tight stores to be worked with Haslam refrigerating machines. Stores of similar character for the preservation of perishable commodities have been erected by several of the dock companies in London and elsewhere, at Smithfield Market, under the Cannon Street Railway Station, and by the British, Italian, and New South Wales Governments. Quite recently the Glasgow Corporation has undertaken to provide refrigerating stores on a large scale in connection with the meat trade of that city; and the example is an excellent one, which ought to be followed at all important meat and fish markets throughout the country. Were this done, a great boon would be conferred on the public and on the general interests of trade. Serious losses would be averted by the better equalisation of supply and demand, gluts would be mitigated or altogether prevented, and it would be within the power of holders of perishable goods to retain them much longer in a seasonable state.

It need only be added that the machines are simple in construction, easy to work, and occupy little space. There are, of course, many methods of refrigeration. "Freezing mixtures" in considerable variety have long been familiar to chemists, and ice machines of various kinds have been devised by engineers. It is with utilities, and not with chemical affinities or mechanical principles, that we are at present concerned. The Haslam machine provides a method of refrigeration which has been extensively tested, and is in the widest use for purposes of conveyance by sea and storage by land.

Other methods of preservation exist. There are sundry other cold-air or ice machines in the market; and antiseptics of various kinds have also been applied with greater or less success. In cold weather a mixture of boracic acid and fine salt, in the proportion of one of the former to two of the latter, answers fairly well for the preservation of herrings. Seven pounds of the mixture suffices for a barrel, with the addition of half a pound of the acid dissolved in fresh water, and used, after the manner of pickle in ordinary curing, to fill up the barrel. This

process does not answer for large fish, pressure being required, as in what is known as the "Roosen method," for which a specially constructed barrel has to be used. The salmon or other fish are put into the barrel, which is filled up with an aqueous solution of salt and boracic acid in the proportions already mentioned. The air is then withdrawn, the barrel hermetically closed, and a pressure of six atmospheres, or 90 lbs. to the square inch, applied. By various experiments at the Scottish ports early in the present year (1886), the efficacy of this process was demonstrated, but it seems too cumbrous for adaptation to the ordinary routine of trade. Herrings treated by the Roosen method are so permeated by the antiseptic fluid that they keep in the open air for several weeks in winter, and yet the actual quantity of acid forced into the tissues is exceedingly small.

The temporary preservation of fish by refrigeration or antiseptics then, is a valuable method of dealing with gluts or preventing their occurrence. Of the importance of extended curing operations to the same end little need be said. Fish cured for distant markets do not compete in the fresh markets at home, and in a time of plethora extensive curing may be very advantageous. Variety of cure, and the opening of additional markets in the British colonies and in foreign countries, are means towards the general object which we have been considering. But while it is of the utmost importance to extend the markets at home and abroad as far as possible, the best means of preventing those temporary gluts from which fishery interests so greatly suffer, as well as of facilitating effective distribution, is undoubtedly to be found in the timely arrest of the process of decay by storage under the effectual operation of the refrigerating machine.

WEST COAST FISHERIES INVESTIGATION.

By W. ANDERSON SMITH, Ledaig.

FOR many years I have sought to stimulate an interest in the marine wealth of the Western Highlands and Islands through their extensive coast line, not only as a question of great interest in itself, but as one bearing more especially on the still wider question of the ultimate destiny of the surplus crofter and cottar populations. No one intimately acquainted with this region and its present population can pretend to assert its capacity to carry a large population in reasonable prosperity, except by means of the development of the fisheries of the whole region.

Aided by a grant from the Society, I endeavoured during the

past summer and autumn to investigate somewhat the waters in question, so as to decide in some degree how far their riches were evanescent, or to what extent the fishing industry in the west could be looked upon as stable. The investigation extended over three months—July, August, and September; and was conducted with as much care as the very trying weather encountered all along would permit.

The quantity of fish taken in the west of Scotland has been undoubtedly increasing, but at the same time many important districts have never been touched; and by means of a thirty ton yacht and a supply of fishing gear, it was my intention to verify, if possible, the general belief in the presence of supplies pointing to industrial development. The expedition was necessarily on a small scale, but was thoroughly equipped, the object being to work the coast carefully and systematically, without being driven to hurry over it.

I may as well acknowledge at the outset that the present summer has proved one of a most abnormal character on the west coast, so that, if I were to draw my conclusions from what has come under my observation during the months of the investigation, I should be inclined to declare the waters were somewhat barren. In anticipation of such a probability, however, I was specially anxious to devote a large portion of my labours to the observation of the presence of fish food, so as to be able to say that the absence of a fish fauna was only temporary, and not due to any real poverty of the waters.

The west coast has to be judged very differently from that of the east. There the seas are shallower on the whole, and provided with great stretches of feeding banks, upon which the fish find a rich diet for the greater part of the year. On the west the sea bottom, with few exceptions, is composed of a blue muddy clay of a tenacious character, and that is as a rule very barren of any life that would satisfactorily provide for the nourishment of large bodies of fish. From whatever storehouse the inhabitants of these waters were to be supplied, it was clear that they could not rely upon any important assistance from the molluscan or invertebrate life of the deeper muddy bottoms of the western seas. Where then were they to look for nourishment? It was true that at certain seasons the seas on the west swarmed with a great population of herring and other migratory fish, and that these could exist upon anything the sea bottom produced was not to be believed. I have long been aware that the waters of the Western Highlands were extremely rich in a floating fauna of minute invertebrates, that are continually recruited from the still warmer waters of the Western Atlantic, a fauna that no locality such as the German Ocean could in itself supply. But was this fauna to be always relied upon?

In an ordinary year the waters of the west are always genial, and life is rampant therein; and even during this cold, wet, inclement season we found they were by no means deficient in a rich fish dietary. The next question consequently arises, Where did this floating life come from? Did the supply all come from this boundless west, that sends us the bulk of our rainy gales?

The examination of this question in detail is not a matter of weeks, but of lengthened, patient, and skilled investigation under the microscope. The species are so numerous and so difficult to differentiate, that it will be long ere the collection made be thoroughly examined. But it is quite sufficient for us, so far as the fish question goes, to be able to say roughly, that, quite apart from what we may call the oceanic fauna, there is a local fauna of a very important character to add to the floating stock. Around most of our coast there is a great belt of seaweeds to several fathoms, and upon this multitudes of molluscs feed, and an almost equally important population of crustaceans frequent it. Again, even amongst the poverty-stricken blue muddy clay, a multitude of annelids or seaworms manage to exist; while on many parts of the coast scarce one inch of rock but is covered with barnacles, and hardly a corner but carries a limpet.

It may not at first sight seem reasonable to claim such creatures as possible food for fishes, but at certain times the water is actually alive with young *Balanus* or barnacles, seeking a place to seat themselves, or rather to settle down head first; while annelids are sufficiently active at their first start; as are even those degraded sea-squirrels that sit like hopeless bags of jelly in their maturity. In their early stages, provided with an extra tail, they brave the dangers of the deep, and are devoured in quantities.

Even the molluscs of the littoral zone, that seem so proof against attacks, such as the various whelks in their strong shells, in their early stage, with a light shell, may be met out at sea floating freely in deep water.

To those, then, who ask what food can possibly be obtained from a coast whose sea bottom is so apparently barren, I answer that the enormous stretch of coast-line must of itself provide a vast supply. The richer the growths of marine algae, the more numerous must the vegetable-feeding molluscs be; while these in their early stages attract numberless crustaceans to feed upon them, to be followed by shoals of fish, to prey indiscriminately upon both. While the west coast, therefore, has not a rich deposit from many great rivers rushing into it, and bearing rich food to the deeper waters, it has a special source of supply of its own, one that is not dependent upon mankind to any

material extent. It may well be, since the cutting of the seaweed for the making of kelp has almost ceased, that the shore molluscs have suffered,—as grouse will suffer when heather is not occasionally burned,—but cutting the seaweed for manure is now so general that I cannot suppose the loss worth estimating.

The food supply of the west being thus partly oceanic and partly littoral, from the extensive coast-line algae-covered, it follows that certain classes of fish will feed upon this, and that they will be different from those that are nourished upon the fishing banks of the east coast. Consequently we find that herring and mackerel abound in specially fine condition in the west, and that they feed upon foods afloat in the water. A local white fish fauna, such as frequents the rich banks of the German Ocean, cannot commonly be expected where the food is afloat; so we do not find it to any important extent. On the other hand, the presence of herring means the attendance of white fish; and in place of a very extensive steady white fishery, as we have on the east coast, the west is only blessed with a fugitive white fishery that is in attendance upon the herring. Under these circumstances, it is less valuable as an industry, except on the west of the Hebrides, because, to the east of the Long Island, coming along with the herring, one or other must be neglected. This prevents that steadiness of application throughout the year that fisheries in regular rotation would have fostered, and makes the problem of stimulating the marine industries of the west coast somewhat more complicated than it would otherwise have been.

A failure of the herring fishery, from any cause whatever, means as a rule a failure of the white fishery; and as has been the case this summer, to some extent in the west of Scotland, a complete failure of most sources of income. This puts the west almost on a footing with the Irish during the potato famine, and produces the same evil results that must follow dependence upon one precarious harvest.

When the herring leave the coast, the white fish frequently leave also; and what we wish to know is where the herring go to, and how the white fishery can be followed and prosecuted when the herring leave?

Owing to the inclement season, so stormy and severe, it proved beyond our power to follow the herring into its particular retirement, nor could I manage to make the desired experiments with the tow-nets in deep water, so as to decide upon the nature of the food that attracts the herring into leaving the coast at such a time. These experiments ought to be made carefully over several seasons at many depths, but it will require a much more seaworthy craft than we were able to employ before the attempt can be made with satisfactory results.

Meantime it is enough to know that the herring, mackerel, saithe, and lythe, the principal fisheries of the west coast inside the Hebrides, live largely if not mainly upon what we obtain in the tow-nets at various depths: to which may be added the sand-eels and herring sile, &c., that frequent the coast in vast numbers in their seasons. For all these fishes devour their own young with ruthless disregard of relationship, and the exchange of civilities in this regard between the several species is most indiscriminating.

These again are the food of great moving bodies of cod, ling, hake, haddock, and coalfish, the result of whose onslaughts must leave those of our fishermen far in the shade. The gulls and guillemots, solan geese, and dookers generally add to the number of assailants; while porpoises and bottle-nose whales make terrible havoc among the shoals. All these fish, flesh, and fowl, however, are migratory attendants upon the herring, and cannot in any degree be considered local in the sense of those of the east coast. This makes our inquiry necessarily more difficult and complicated, and one that ought, properly speaking, to be spread over many years, seeing that seasonal influences may have, and do have at all times, an important bearing upon the problem of the relative wealth of fish life. I sought to divide the inquiry into various branches, some of which are not so dependent upon seasonal influences:—

Thus there were the local fish supplies.

The local shell-fish supplies.

The supplies of bait readily procurable.

The possibility of the ready introduction of bait.

The migratory fish shoals.

The wealth of food in the water.

And in all cases the food of the various fishes, and the temperature of air and water.

I must at once acknowledge that over a large portion of the coast visited, I was greatly disappointed at the result in certain classes of marine life. Indeed, from the Knapdale coast up to the northern coast of Skye, we could not say that the local fish found anywhere in this particular season were such as to lead to important development. This might arise either from the peculiar character of the season—one of the most inclement and backward for a lengthened period—or from the actual poverty of the ground traversed, and I sought to discover to which of these causes the actual conditions were to be attributed.

The Knapdale coast, from West Loch Tarbert to Keills, I can scarcely suppose to be a rich coast at any time, although certain products appeared to us to be quite neglected. But the shores were not rich in crustaceæ, still less in mollusca, and the clay bottoms of the lochs gave no prospect of a valuable

supply of food for any class of fishes whatever. The few codlings and flounders were of no importance, and the waters gave every evidence of being barren of the ordinary white fish, with the exception of the whiting.

Shell-fish were far less plentiful than they ought to have been, and we are persuaded that the cultivation of mussels, and laying down of extensive scalps intelligently, would induce a more healthy condition of these waters. For besides the increase that takes place around the parent mussels, the quantity of floating spat thrown off from such beds induce the visits of and stimulate the increase of many varieties of fish. Mussels bring flounders, and these supply a perennial bait for the larger white fish. The very extensive beds of *Zostera marina*—the most extensive we have met on our western coast—point to a most suitable ground for the deposition of oysters; while the *Zostera* itself ought certainly to be utilised to a far greater extent than it is. We import it largely from the Continent, and yet seemingly cannot make use of our own as a cheap substitute for horse hair.

I did not find bait plentiful along this coast, although there was no reason why shell-fish should not have been more extensively propagated. The lugworms were not as well fed or rich looking as might have been anticipated, and this pointed to a poor flounder population.

The lobster fishing on the Sound of Jura was the most valued and important fishery here at the time of our visit, but no effort was made to keep them in quantity until the dear winter season came round. I cannot think why the neighbouring peoples should not more extensively supply themselves with a salted and dried store of saithe and lythe, *Carbonarius* and *Polluchius*, which seemed to be in countless numbers along the Sound of Jura during our visit. The herring fishery, being that of the "gut-poke," could not be cured, and consequently was of a temporary character and small value. The coast is well adapted for the cultivation of Salmonidæ, and the scarcity of population and character of the coast is advantageous for the preservation of them when cultivated. We were surprised to find such extensive ranges of water so absolutely devoid of any effort to increase their natural advantages. In Swein, and West Loch Tarbert more especially, enough mussels might be readily grown to supply the whole east coast.

In these lochs the presence of the migratory fishes is very uncertain. Killisport, with its open mouth so readily accessible to the Atlantic, has a small winter herring fishery; and when the herring enters Swein the fish are likely to remain there for a time. But these fisheries are at present unreliable, and not such as to enable a population of fishermen to exist. All fisheries are, however, interdependent, and if the careful cultiva-

tion of mussels was to employ a small body of fishermen, they could find valuable occasional employment in the pursuit of those intermittent fisheries that would be stimulated by the greatly enriched waters.

All these loch herrings are, however, approaching the shore in the season for spawning purposes, and I do not consider it unreasonable to insist that the lochs should be stocked with a native supply of incubated herring, as they may well be with one of incubated sea-trout. In both cases the fish would return to their native waters.

The waters of the Sound of Jura are in marked contrast to those of its entering lochs, in the wealth of *Entomostraca* and other fish food. From whatever cause, during our visit, the Knapdale lochs proved as deficient in this floating life as other such contained lochs. We are disposed to consider it is caused by deficient salinity and low temperature. The Knapdale waters on the west are uncultivated, unenriched, and not naturally provided with a fish population; but there is no reason to suppose that a little care and expenditure would not steadily overcome this deficiency.

The Mull coast—north, south, east, and west—is altogether a richer and more promising field than that further south. The entering lochs are not always supplied with shoals of migratory fish, but they are naturally richer; the waters are better supplied with floating food, the shores more alive with mollusca, and the outer waters from which they are fed more immediately rich in oceanic forms of food value to the fishes. Here there is a distinct promise of more important fisheries both inshore and off. Lobsters have long been a valuable product, herring are frequently in multitudes in Lochs Scridain and Buie, and in smaller quantities in Loch-na-Keal; while mackerel are commonly on the coast. The Iona flounder is a great fact, and the long line fishery is commonly most successful. I did not manage, owing to boisterous weather, to give the time to this open coast that its importance demanded, but the time I did spend assured me of its great value. Islay and Jura were too exposed to work during the untoward season we had.

The outer waters are invariably in my experience more important as a fishing ground. From whatever cause, the inner lochs have greatly fallen off in sea-fish of recent years, probably from the increase of rainfall and consequent decreased salinity. Enough that these outer waters are richer in floating food, and more commonly frequented by herring and mackerel shoals, as well as white fish, than the inner waters, into which the herring and mackerel only enter at uncertain and unreliable periods.

The head of Loch-na-Keal offers every inducement for the cultivation of shell-fish in great quantities, quite sufficient to

supply any line fishery that might be prosecuted in the waters to the west of Mull. Here the water is very shallow, and the reach of sandy mud extensive; while entering fresh water greatly increases its advantages as a mussel ground. The shores of the loch seaward are deeply fringed with marine vegetation, and I have little doubt a plentiful supply of food would always be forthcoming from these outer waters to fatten any quantity of mussels. These shell-fish could then be used in the capture of the whittings that frequent most of the sea lochs in their upper portions; while the flat fish of the sandy outer districts could also be captured, either for immediate consumption, or for use as bait on the long line fishery further seaward.

In considering the west of Mull, the question of prompt communication is one of the most important. In the summer there is a swift passenger steamer daily, that encircles the island; and if it could be made a vehicle for fish traffic also, the trade might be stimulated to a degree. But something more reliable and constant should be instituted, and we should advise an effort being made to establish a fishing station in the west, to which all supplies could converge, and whence they could be despatched at any season of the year across to Salen, Mull, where the daily steamer down the Sound calls. This would place the west in immediate contact with Oban and the south. The distance from sea to sea at this point is only some 3 miles; and allowing for a station some few miles down the loch, a simple tramway 5 or 6 miles in length would place a western station within an hour's run of Salen, and two and a half hours of Oban, at all seasons of the year. The road as it is is quite level, and readily traversible by wheeled vehicles, so that no serious difficulty lies in the way. Only from the district of Loch Tuadh, where there is a safe anchorage for good-sized vessels, can a fishery be carried on around the Treshnish Isles; and although the whole west of Mull is well fished for lobsters, mainly from Tobermory, their boats are not large, and can be run ashore in creeks where more important fishing vessels cannot be expected to approach. In this connection I may observe that the lobster regulations are not carried out here. The creels are not made to permit the escape of small lobsters, and I am given to understand these have been taken to such an extent as to seriously interfere with the success of the fishery in recent years. This is a district where the pond system, whereby the lobsters are kept, when captured in the summer, until cool weather and better prices are obtainable, might well be carried out. The present isolation of district, which yet may even now be reached in three hours from Oban, alone prevents a considerable development of all fishing industries in the vicinity.

The Loch Buie district is so readily accessible from Oban—two

hours' steaming in the summer—that the south of Mull and the fishing grounds of Dhu Hearteach and Colonsay could be most easily worked from this point. It is to be hoped that more attention will be devoted to the fisheries of this fine island, so close to a railway terminus, and with established steam communication. So long as Tiree and Coll remain, practically speaking, without harbours, so long their fisheries must lag behind. Coll could protect a fishing fleet with little difficulty, but Tiree would demand a much more serious expenditure ere a satisfactory construction could be completed. The expedition yacht could not manage to test these localities under the weather conditions prevailing during the season.

The boats of the little hamlet of Kilhoan, in Ardnamurchan, do not fish much in their immediate vicinity; although, from the wealth of *Amphipods* and smaller *Entomostraca* in the neighbouring waters, I should have thought that their fishing banks were rich. The people, however, find it more profitable to follow the large fish shoals around the coast, as indeed is generally the case with our fishermen where it is practicable. This is a habit that is also partly dependent upon communication. Where fish are in multitudes, and boats pursuing them, the steamers of the buyers and the railway company follow the fleet, and afford all facilities; but otherwise local industries are not able to get either prompt purchase on the spot or ready access to markets.

The entire absence of herring shoals in a ripe condition in the south, and the severity of the weather that prevented our reaching the more exposed islands in our programme, induced me to seek the more northern and better-sheltered fishing grounds, whence news of herring being captured reached us. Thither, accordingly, we pushed, and found that Loch Hourn was as empty of herring as Loch Killisport, while other fishes were by no means numerous. The water continued cold, the few fish taken were not rich, and local supplies of fish food were not plentiful. It was everywhere evident that an extremely backward season had prevented all life reaching that maturity that was required. In Loch Hourn, the few herring taken had been captured at the head of the loch, and that is looked upon as a bad sign. The reason is that these were local fish, that had not gone seaward for a richer supply of food, but had remained all the season in the deeper waters of the loch. When captured near the mouth of the loch, they are coming in ripe from the warmer, richer outer waters.

Our progress north was marked by the same results as those obtained further south. The waters were remarkably full of undeveloped life at this late season, the absence of herring was everywhere marked, and the larger and more voracious fish from

the deeper waters were no more meeting herring than the sea-birds that we shot and examined when diving on the surface.

Neither at Broadford nor Portree, at a time when the herring fishing is usually at its height, did we find herring more plentiful than further south; and although a few crans of herring were taken in the north-western lochs, the fish as a rule were poor and not yet ripe.

It may be accepted that the cause of the shoreward approach of shoals of fish is either the pursuit of food or the necessity for spawning. In the former case the herring are commonly called "gutpokes," their stomachs being well filled; but in the latter case they are called clean herring, the stomach being empty. Lying between the lobes of roe or milt, a full stomach greatly incommodes a herring; and the probability is that when it approaches the shore in this condition it is not eager at all for food, but, like a clean-run salmon, has another purpose in view. The clean herring are consequently in greater shoals, and actuated by a more unreasoning instinct, than those that approach to prey upon sand-eels, young herring, and minute crustaceæ. These are not so close together, and are less regular in their movements. The cause, then, of the almost total absence of herring during the past season in the West Highlands—outside Loch Fyne in the one instance, and south of Stornoway in the other—appears to have been the unripe condition of the fish, that prevented them approaching to spawn. This may have been caused by the undue cold of the water and the unripe condition of their food. Where signs of herring were observable, the fish passed through the meshes of the nets as being immature; and the larger ones taken were still on the feed, and with undeveloped ova.

The same results were observable in the case of the sea-trout, the fishery of the Salmonidæ throughout the west having been of a most backward description.

In marked contrast to these more delicate fish was the enormous wealth of saithe and lythe—the medium-sized specimens of the coalfish and pollack—throughout the whole West Highlands. Strong, somewhat coarse, and most voracious fish, these seemed to thrive all the more on account of the absence of the herring and mackerel. It is almost inconceivable the quantity of fry these vigorous fish devour, and it will be a matter of extreme interest to watch the result of an abnormal season such as the past, during which fish that in their adult state are amongst the greatest enemies of the herring should have multiplied indefinitely at the cost of the herring. It is to be regretted that these fishes have not been more pursued by the people of the west, as, when salted and dried, they make an admirable addition to their ordinary diet, and in any case are such for-

midable enemies to the herring shoals, whether as fry or when both are matured, that a well-organised attack upon their ranks would well repay the fishing population over a few seasons. In their ordinary medium size they live upon the same food as the herring, besides devouring the herring sile in myriads; and in their maturity they devour the full-grown herring by the thousand, so that it is self-evident that the coarse and inferior fish should be kept down, if the finer fish is to have a fair chance of multiplication.

The north of Skye is a well-frequented fishing district, but whether it would support a purely fishing population throughout the year in its immediate neighbourhood would require a more continuous and extensive examination than could be given in the time at my disposal. As it is, a purely fishing population does not exist to any extent meantime in the West Highlands, and it would perhaps be unreasonable to withdraw their holdings from fishermen until it could be proved that the sea could itself provide a sufficient subsistence. At the same time, it must be understood that it requires a thrifty and intelligent population to exist by the sea, as an average of seasons must be taken—one season such as the past being destruction to any ordinary fisherman without capital, unless supported by an interested capitalist.

The south of Skye, on the other hand, is so completely out of the ordinary course of steamer traffic, that it may be looked upon as being, along with the Small Isles, one of the most neglected portions of Her Majesty's dominions. Whatever may be thought of the lack of local efforts at stimulating industrial enterprises, there can be but one opinion as to the neglect of Government to do its duty in this locality. Neither telegraphic nor postal communication has been attended to, and a visitor finds himself further in reality from the centres of thought and commerce than if he were in the wilds of Canada. It is quite out of all reason that the south of Skye, with the adjacent isles of Muck, Eigg, Rum, and Canna, all islands capable of most important development—more particularly Canna—should be left out in the cold.

Fifteen miles of cable would connect all these islands, and bring one of the finest fishing regions of the west into prompt communication with markets, whereas at present it may take a fortnight for a letter to reach London, and did take a month for a note to reach Oban from Rum! Yet these islands are in themselves not without resources of value, the richest of mutton, and the finest of climates for vegetable growths; while around them are the best fishing banks inside the Hebrides. The population is at present restricted, owing to the impossibility of getting an outlet for produce, and Government refuses to give

any facilities, owing to the lack of sufficiency of population! Population waits upon Government, and Government waits upon population; giving another handle to the cry for local government, which the persistent Imperial neglect of the Highlands and Islands is mainly stimulating. Government have of late freely cast the opprobrium of the backward state of the Highlands and Islands upon the proprietors. We wish to return the complaint four-fold upon the Government, who have never forestalled business or population, but come dragging up behind. Only to the generous conduct of Highland proprietors, in guaranteeing the large amount demanded, are we owing the larger proportion of telegraphic stations throughout the west; and I hope the weight of this Society will be brought to bear upon the Department, that this quite inexcusable and intolerable neglect be remedied without delay. Had the telegraphs of the country remained in private hands, we should have had already a complete system connecting every island of the west, and stimulating the fisheries everywhere.

Over all this ground, when fish shoals—herring and mackerel, followed by white fish—are not present, there is always a local fishery of conger and lobsters totalling a considerable value. This value is, however, reduced to the utmost from cost of carriage, small returns through length of time on the passage, and frequent total loss owing to arriving in bad condition. Most of this would be at once remedied by telegraphic communication. At the time of our visit to Canna, nearly ten dozen lobsters had been despatched to London, with the result that the fishermen were owing some eight or ten shillings, being cost of carriage beyond the price received. Had the state of the weather and the markets in the south been wired to the island, this consignment would simply have been kept over until better conditions prevailed. Besides fish and crustaceæ, over all this ground the supply of whelks is very great. Sea-weeds are plentiful, and harbour vast quantities of these edible shell-fish, which always fetch a good price in the London and other markets. It would perhaps be better in places if more of it were cut for manure, as then the fronds would be kept more delicate, and more capable of supporting a large population of vegetable feeders, than if left to grow annually coarser. A woman and her family can easily earn 20s. to 30s. in a tide gathering whelks, and that is quite sufficient to maintain a family in these districts. But to obtain the utmost possible advantage from the produce gathered, prompt communication is again required, and in the best districts it is not forthcoming.

What can be done with the crab fishery of Scotland, is a question that the Society has on various occasions sought to answer? So far as our experience goes, the question has not

been answered in any degree. Those interested have stimulated efforts to send them to market, but these tentative consignments have never proved remunerative to the senders, and often very much the reverse. The reason seems to be that the Cornish crabs are so much superior in size to those of Scotland, that the finer ones bring up the average to the price noted in the market reports; whereas the smaller are sold at rates that may be remunerative after a short journey, but not after payment of the railway rates all the way from Scotland. At any rate, although fine average crabs are plentiful, we seem unable to obtain a price that would cover the labour and cost of delivery in the south.

No such difficulty exists with regard to freshwater eels, and these are quite numerous all over the west coast, and more particularly amongst the islands. They have of late commenced despatching them to market, and the encouragement received is such that no doubt they will be stimulated to continue the business.

The result of the investigation, so far as it was possible to carry it, showed that the past season was a most abnormal one, that the usual migratory shoals did not mature sufficiently to make their customary visits to the ordinary fishing grounds, and that most classes of white fish must have kept outside with the herring, either from the same reason as the herring, or from being in attendance on these fish.

It seemed to us that over much of the ground no local fisheries, other than those mentioned, remained of a sufficiently remunerative character; and that even if the fishermen prosecuted the fishing with greater energy in their ordinary boats, they could scarcely be expected to make a very important living. At the same time, fish could not be said to be absent, and a fair supply for home consumption could have been readily secured; while abler boats, and less readily discouraged fishermen, could have done better outside. That the immature herring were off the coast we had many opportunities of noting, and we have little doubt that stouter boats, in which the fishery could have been prosecuted in a rough sea, would have enabled the natives to go out to deeper waters for the white fish that were not procurable in shore. It is matter of importance to have this question more fully tested by means of suitable vessels in the proper season of the year. While the muddy bottom of the west coast is not rich in food, the waters are most certainly capable of maintaining large shoals of fish, and even during this untoward season did support exceptionally large shoals of lythe and saithe, that were not sufficiently utilised by the population of the coast. Any quantity of mussels could also be readily cultivated amongst the Knapdale lochs, to the west of Mull, in Loch Slapin, and the lochs to the north of Skye. No dearth of this bait need be

anticipated, if the smallest care and intelligence be exercised in its propagation.

The herring of the west coast are more or less localised, and the shoals are breeding at all times of the year. Thus we found herring sile in July at Crinan, and others of the same size at the end of September near Bunessan, in Mull; while we took on the same day at the latter place herring half-grown, that would have passed through the nets, and large herring in the nets with well-developed milt and roe. It was evident, therefore, that these could neither have thrown their spawn in November nor in February, the months usually noted as the spawning months. Neither would the herring sile mentioned above have been deposited as spawn, until well on into the spring and summer. There is, practically speaking, no difficulty in incubating herring ova, and so soon as this is done, and the fry carried the length of half absorbing the umbilical sac, they should be turned into the sea-lochs, now deficient therein. It is a mistake to carry them too far in confinement, as the longer they are thus kept the more they lose their instinct of self-preservation. No doubt a very large proportion of fry thus turned loose will become a prey to other fishes and crustacea, but so would they at any age, and the older the less capable will they be of acquiring habits of self-preservation. The whole difficulty is in keeping the young fish when they ought *not* to be kept. Let them be roughly incubated in quantity, and at once turned out to forage and fight for themselves.

I wish specially to put on record here, that whereas the West Highlands ought to supply Salmonidæ—not salmon alone—equal to the whole present production of Scotland, it is remarkably deficient in this harvest of the sea. That most yachts should carry an illegal net says little for the moral instincts of their owners, and not until this disgraceful piracy is put down can we anticipate much progress in the artificial stocking of every stream and loch in the west. When this is done, we anticipate a most important addition to our national fish resources, but security to the owners is the first requisite. Fish culture is readily and cheaply conducted, and we hope to see a growth of public conscience in this regard, and that the Salmonidæ of the west be not only greatly increased, but increased to the advantage alike of the country producer and the city consumer, not for a small body of reckless sea-rovers. It is by no means an easy matter to reach the lawless classes who do most injury to the western Salmonidæ, and Mr Young, in his carefully prepared Report for the Fishery Board of Scotland, 1885, has gone fully into the subject, both of poachers from yachts and “springers” from shore. Of late the latter as well as the former have diminished, owing to the action of the district boards (more

especially of the Awe) on the one hand, and the action of the best yacht clubs on the other. A circular was sent out in 1874 by the Commissioners of Scotch Salmon Fisheries, and another in 1884 by the Secretary of the Fishery Board for Scotland, calling the attention of secretaries of yacht clubs to the grievance, and we think if all yacht clubs followed a good example, and expelled all members found using such illegal nets, it would soon cease, and the poorer class of "scringers" would not have such a bad example to point to. As it is, our experience does not lead us to expect much from the yachtsmen themselves, or their crews, every available bit of coast being worked thoroughly out by the end of the season. The "scringers" are more easily reached through the dealers, who might well be licensed and looked after by the officers of the district boards. In the east it is more a question of salmon in large rivers; with us in the west it is a question of sea-trout in every sea-going stream. A very small stream judiciously worked can carry a very large stock of sea-trout.

The sea-trout is, no doubt, the most suitable fish to breed in the west of Scotland, where the streams are small and numerous. There it is not a question of a great expanse of fresh water, but merely a fresh stream in which to deposit ova. The expanse of sea water rich in food will carry an enormous fish population, and the very smallest streams frequently provide the finest supply of sea-trout.

I have little doubt that the general absence of cultivation in the west, and the scarcity of population, will affect to a small extent the local fisheries; but the west is mainly dependent upon rich warm waters, full of active life, influenced to a more important extent by temperature and meteorological conditions.

Throughout the districts visited the absence of a population relying upon the fisheries was marked. Unless herring or mackerel shoals were on the coast the boats were high and dry; and although on those occasions the local fishing was not of very great importance, the sea-fishing, as such, was neither worked nor prospected. On much of the coast the population was scant, but other districts, such as Skye, were densely peopled by those who only worked spasmodically, and without skill or knowledge. The Government can do much at small cost, not by giving eleemosynary aid, but by helping the country intelligently through its departments. The utmost facilities should be given in the way of telegraphic and postal communication, more especially to Coll, Tiree, the Small Isles, and the south of Skye. The Salmonidæ should be protected by a few simple regulations, mussels, and other bait equally secured; and the harbourless regions, such as Tiree and Coll, should have boat harbours erected by intelligent men, with the aid of local know-

ledge, so that no absurd blunders should be committed, as has been so frequently the case in the Highlands, where harbours and piers have not seldom been worse than useless when constructed.

This done, I have no fear but that the proprietors will do their utmost for the advancement of their properties, by cultivating the more valuable and suitable *Salmonidæ*, as at Loch Buie to-day, and by giving every facility for the laying down of mussels and oysters. The Society might well work hand in hand with those departments specially interested in the advancement of the fisheries, so that it might add the weight of its influence and experience to further the ends in view.

The time has gone by when any industry, of proved and known value, requires to be fostered in this country by loans to individuals, and the money would be more advantageously employed in improving communication, investigating the best grounds for fishing, and the most suitable localities for harbours. This done and made public, capital would soon concentrate towards the most likely outlets, without the necessity for Government going out of its way to compete with private enterprise. What is particularly required is that the Government Departments at present in existence do their duty in these regions, that have so long been left out, as if they had no claim whatever upon the national care or the national expenditure.

GENERAL SHOW OF THE HIGHLAND AND AGRICULTURAL SOCIETY, HELD AT DUMFRIES IN 1886.

THE Fifty-ninth Show of the Society took place at Dumfries on the 27th, 28th, 29th, and 30th July, under the presidency of His Grace The Duke of Buccleuch and Queensberry, K.T. The Society had met at Dumfries on six previous occasions, namely, in 1830, 1837, 1845, 1860, 1870, and 1878.

The first Show was held in the High School Yard; the second within the New Markets and Mr Howat's field, English Street; the third on a part of the level haugh called the Dock, situated on the margin of the Nith; the fourth on the farm of Lincluden Mains; the fifth, sixth, and seventh were held on the farm of Rotchell.

The arrangements on this occasion were as nearly as possible the same as at Aberdeen in 1885.

The judging commenced on Tuesday, 27th July, under the system in use previous to the Aberdeen Show.

The General Meeting of Members was held in the Showyard

on the afternoon of Wednesday, the Duke of Buccleuch occupying the chair. The Public Banquet took place the same evening, and was presided over by the Earl of Galloway in the absence of the President, and the Ball was held on the evening of Thursday.

The following remarks regarding the stock are taken from the notes of the Judges:—

Shorthorn.

The competition in the shorthorn sections was very small, and with the exception of the winners there were no good specimens of this most valuable breed of cattle. Most of the famous Scotch breeders were conspicuous by their absence as exhibitors; nevertheless, the representatives of the late James Bruce, Burnside, well sustained the credit of Scotland, and in most of the sections—with the exception of that of aged bulls—exhibited animals of good quality and strong constitution. In the male sections Mr Handley, Greenhead, Milnthorpe, Westmoreland, carried off all first prizes with good bulls of uniform character. Mr Thompson, Inglewood, Penrith, who was more or less successful in most sections, showed animals of great frame, quality, and constitution. The Judges expressed their opinion that the milking qualities of the breed should not be lost sight of, and that a square well-shaped milk vessel, in their minds, is one of the chief and most attractive points of a shorthorn cow.

Ayrshire.

Only three aged bulls were forward. They were, however, splendid specimens of the breed. The first was an easy winner. He has only been once beaten during the last three years. On that occasion he was lame, and not in show condition. The second prize animal was a good specimen. The third promises to make a good bull with another year's keep. Only two bulls were forward in the two-year old section. The first prize was an easy first, and a good second. The one-year old bulls were of fair quality. The cows in milk were a middling class, with the exception of those placed first and second. The cows in calf were a small class, the first prize animal being an easy winner. The two-year old heifers were the best class, all the prize winners at local shows being forward. The one-year heifers were a fair section; the first and second were well matched.

Galloway.

The Dumfries Show district being the home of the Galloways, it was naturally expected that there would be a good exhibition,

both as to quantity and quality, and certainly it far exceeded the expectations of the most ardent admirer of the breed, who never before had an opportunity of seeing them brought out in such perfection. To begin with the aged bull class, which numbered 10, nearly all of them were above average merit, and it would be difficult to find the same number of animals to equal the first four, which were all bred by the late Duke of Buccleuch and Queensberry, K.G., and reflect great credit on the farm steward, Mr Cranston. There were 10 two-year old bulls entered, and were a fairly even lot, particularly the first three, but Galloway bulls are most difficult to bring out at that age. The one-year olds, numbering 13, were a very good lot, but the two placed first and second were quite ahead of their rivals, and no doubt they will be heard of again in a friendly encounter. The females were headed by a splendid lot of 22 aged cows, which were generally admitted to be the best ever seen in one ring, and the four placed first in their order were never equalled at the Show of the Society before. The three-year old cows, numbering 8, were also a very meritorious class, but were scarcely so like in character as the aged cows and two-year old heifers, which numbered 17. A magnificent lot, in fact so like that it was a difficult task to distinguish betwixt the first four, and no doubt they will be seen to advantage again in many a show ring. There were 21 one-year old heifers entered, the first prize one of excellent quality; also the second, with the exception of her head, which is objectionable. The others were just of ordinary merit. There were 6 groups entered, all excellent types of the breed, but as most of them have been noticed in their different sections, it is not necessary to mention them

Aberdeen-Angus.

Polled cattle, taking into account the distance from the home of the breed, were a good all-over lot, although, with a few exceptions, scarcely up to the high standard seen at some of the Society's former Shows. The aged bulls, with the exception of the first prize one, were of no extraordinary merit, yet good useful animals. The two-year old bulls, which were most numerous represented, were a fair lot, but had a general want of fascinating character. The same remark may apply to the one-year old bulls, with the exception of the first prize one. The cow class may be said to be the best, the leading cows in particular being exceedingly good, although of different type. The two-year old heifers were a good equal lot, yet faultless ones were not to be found amongst them. The one-year old heifers were a promising lot for their age, and from the present appearance of several of them, may be heard of in future.

Highland.

Considering the distance Dumfries is from the home of Highland cattle, the number and quality of the exhibits were alike good and creditable. The first prize aged bull was a very fine specimen of the breed, good style, and very well ribbed, with a good coat of hair. The second was less in size, and not in such good condition; a very good bull by the time he is five years old, and if taken care of he will compete with the first prize bull. The third was a big massive animal, well shaped, but looked badly when walking; was very thick in the neck, and had a bad horn. The one placed fourth was a fine stylish animal, but wanted rib badly. The two-year old bulls were a poor show. The first prize one was a well-bodied animal, but had a very poor horn. The first prize cow had a good style, was well quartered, and had a good coat of hair. The second prize cow was aged; she had been a good cow in her day, but on account of age did not show such a coat of hair as the first prize animal. The third was a very good cow, with fine style of head, but thick in the neck, and did not stand so well as the other two. The first prize three-year old heifer had great substance and style, very good quarters, fine clean neck, and a good head. The second was a very neat animal, very well built, but was a little deficient in head and short in neck. The two-year old heifers were well represented both in number and quality, and the first prize animal was of exceptional merit.

Horses.

Stallions and Entire Colts.—Of the aged stallions (foaled before 1st January 1883) placed before the judges, there were a few animals of well-known fame, that had on previous occasions occupied the foremost places in the prize lists of the Highland and Agricultural Society, as well as that of other leading societies, and admitted to be the best horses of the kind that could be found anywhere, although some of them were looking somewhat at a disadvantage, their travelling season being scarcely closed. The three-year olds, although not a numerous class (being the smallest in the male sections), were really a good class. The exhibits included one or two most superior specimens of the breed, both as regards quality and substance, and would have made their mark in any showyard competing amongst this class of stock. The two-year olds were the largest and a highly meritorious class, and those put forward comprised several animals of really superb quality, and it took the judges some considerable time to arrive at their decisions, the animals that obtained the highest awards being of exceptionally high merit, and calculated, as well as numbers not fortunate in getting tickets, to turn out sires to

get such stock as will keep up, if not excel, the high position the Clydesdale breed has attained. In the class for yearling colts, the number of entries was second to that for two-year olds, and comprised a large proportion of excellent promising young colts, although showing perhaps more diversity of style, quality, and substance than the more matured animals which composed the other classes; when style, quality, and substance had to be considered, it must have been a work of no little difficulty to award the order of merit.

Mares, Fillies, and Geldings.—The mares with foals at foot were a fair class, none of them of very extra merit. The first prize animal in the section for mares in foal was of high standard, being considered one of the best mares seen in a show-yard for years. The second was very good, and what followed were fair. The three-year old fillies were a good lot all over. The two-year-old fillies had most merit; seven of them were of more than ordinary merit, and the remainder of the class were good specimens. The one-year old fillies were a moderate lot, with the exception of the three placed first, which were of good quality. The geldings were a poor lot, both in point of numbers and excellence.

Hunters and Roadsters.—Hunters were an average show; the light weight section was a really good one, and the winner was quite a model of what a 12 stone hunter ought to be. The brood mare class contained two or three very good animals. Some of the young hunters were of great promise. There were some good hackneys and roadsters in each class; and the two winners in the Shetland pony classes were the most perfect animals of their kind the judges ever saw.

Blackfaced.

The aged tups were perhaps the best class shown, indeed seldom if ever were so many good sheep seen at the Society's Shows. Shearling tups, with the exception of a few (which were fair), were only a very middling class. Ewes were fairly good, and gimmers an extra good class. Tup lambs were numerous, and much better in quality than last year, so that, taking the blackfaced sheep all in all, that class at Dumfries was quite a success.

Cheviot.

Cheviots were only a middling lot. In the aged section for tups there were a few fair good sheep. The shearling tups were a miserable turn-out, except the ticket holders. By far the best of the Cheviots were the ewes, the four prize lots being quite up to former shows. In the section for shearling ewes or gimmers, only one lot was up to the mark. Had some of the

others been properly brought out, they would have run the winners pretty hard. As a whole, the Cheviots were a very unequal lot.

Border Leicester.

The Border Leicester sheep as a whole (excepting the ewes) were a grand display. The placed old and shearling tups and the prize gimmers were all magnificent specimens of this favourite breed,—the old tup which received the Tweeddale medal especially so.

Long-Woolled other than Border Leicester.

The long-woolled sheep were barely up to former exhibits of the Society, although there were some very fair animals shown.

Shropshire.

Considering that the locality of the Show was so far from the home of the Shropshires, the exhibits were very satisfactory in every respect. The competition was least in the class for old tups, there being only two entries; however, they were fair specimens of the breed. In the class for shearling tups there were several good animals. The first prize was taken by an exceedingly smart sheep bred in England. Between the second and third prize sheep there was little to choose, both being useful sheep; the second prize sheep in this class obtained the silver cup given by the Shropshire Sheep Breeder's Association for the best Shropshire tup exhibited bred in Scotland. The class for stock ewes was good, though it was questionable whether prizes given for stock ewes do good or the reverse, as old ewes are in most cases fed too fat for profitable breeding. The next class was for shearling, and some very smart animals competed.

Short-Woolled other than Shropshire.

In the sections of short-woolled sheep other than Shropshire, the competition was anything but keen, the Oxfordshire Downs taking the chief prizes. Some of the sheep competing in the sections would be better described as long-woolled.

Half-Bred.

The sections for half-bred sheep were poorly represented as to numbers, whilst the quality was very superior in each of the sections. In one or two instances exception might be taken to over-rough clipping, which ought to be discouraged. The characteristics of the Dumfriesshire half-bred sheep and the half-bred of the Border counties are so very different, that when brought into competition they should come under the eye of more than one judge, to prevent either the one or other suffering from want of an advocate.

Swine.

The boars of the large breed were a very fine class, and the sows and pigs of the same breed were a very good class. In the section for boars of the Black or Berkshire breed only one animal was shown, but it was worthy of the first prize. In the sections for Middle White breed all the animals were very good. A sow of the small White breed, entered as Black or Berkshire, was not eligible for competition; it would have been well deserving of a prize had there been a class for small breed.

Poultry.

The number of entries was very small, many of the sections with no entries and several with only two or three. In the eight sections for Dorkings the quality was all that could be desired; in fact, some of the very best and most perfect specimens were exhibited; the above classes were certainly quite ahead of any of the others. The Cochins and Brahma classes were fairly good. Spanish were rather a disappointing class, as they have mostly been looked upon as one of the leading Scotch breeds, and at some of the late Edinburgh shows they have been seen in great perfection. The Scotch Greys, which are purely a Scotch breed, may be said to have been fairly represented as regards numbers, but they have been seen much better in quality. The Hamburg classes were below the usual standard, and the entries very meagre. The eight sections of game did not do credit to the exhibitors, the entries being very small and the quality only second rate. Bantam classes were fairly good. In ducks, turkeys, and geese the entries were miserably small, but the quality fairly good.

Dairy Produce.

The dairy produce was on the whole of good quality. The fresh and powdered butter very good, but the cured butter was inferior. The Cheddar cheeses were a good show for the season of the year. The Dunlops were of very poor quality.

Working Dairies.

As at Edinburgh and Aberdeen Shows, the Directors determined to have a working dairy at Dumfries, and they again entrusted the arrangement of it to Mr M'Queen of Crofts, and Mr Menzies, the Secretary. They secured the services of three instructors in cheese-making, viz., Mr Drummond of Ingersall, Canada, the instructor for Ayrshire and Argyllshire; Mr John M'Master, Culhorn Mains, the instructor for Wigtownshire; and Mr James Smith, Hardington, Borgue, instructor for Kirkcudbright; who gave a demonstration—one each day—during the last three days of the Show. These demonstrations appeared to excite great interest, and the place was crowded with keen observers.

The arrangements for churning and butter working were the

same as at Aberdeen, and were considered quite satisfactory, with one exception, that most unfortunately the cream separator which had been used for the occasion broke down, and there was no time to procure another.

The Jersey cooler and separator was exhibited in the dairy for the first time in Scotland, and was considered a success. Mr Todd, Mouswald Grange, who supplied the milk, carried out his contract most admirably, but the milk was carried about 10 miles in carts, which did not improve it for butter making. Considering the wet weather, there was a fair demand for strawberries and cream, but not so great a consumption as on former occasions.

Caledonian Apiarian Society.

The exhibits this year, considering the very severe spring, were a pleasant surprise to all bee-keepers who were at the show. From the counties of Wigtown, Ayr, and Dumfries were sent a large amount of fine comb honey, which demonstrated the advanced state that practical bee-keeping has now attained. The marketable manner in which honey has been forwarded for the last ten years to these annual exhibitions has done much to increase the cultivation of bees, and almost raised it to the dignity of a fine art. The "observatory hives," as usual, were a great source of attraction to visitors; and the "manipulating tent," where experts were busy at stated hours, showed how easily bees can be handled by those who know the way. The judges were the Rev. Mr Sanders, Tundergarth; Mr William Thomson, High Blantyre; and Mr James Anderson, Dalry. Unfortunately, the weather on both the Thursday and Friday was very unpropitious, rain falling heavily on both days, which resulted in a loss to the Society of £17, 2s. 7d. Subscriptions to the funds of the Society will be received and acknowledged by the Hon. Secretary, Mr Robert J. Bennett, 50 Gordon Street, Glasgow.

The Exhibition consisted of the following entries in the different classes:—

Cattle.

	Bulls.	Cows.	Heifers.	Oxen.	Total.
Shorthorn,	15	5	14	...	34
Ayrshire,	12	18	21	...	51
Galloway,	33	30	38	1	102
Aberdeen-Angus,	24	12	20	...	63
Highland,	11	6	12	2	31
Cross, . . . .	...	...	2	...	2
Jersey,	1	1	...	...	2
Total,	96	72	116	3	287

Horses.

	Stallions.	Entire Colts.	Mares.	Fillies.	Geldings.	Total.
Agricultural horses, . .	23	102	27	81	6	239
Hunters and roadsters, . .	...	...	23	...	29	52
Ponies,	2	...	9	3	...	14
Shetland ponies,	3	...	3	...	...	6
Thoroughbred,	1	...	...	...	...	1
Total,	29	102	62	84	35	312

Sheep.

	Tups.	Ewes.	Gimmers.	Lambs.	Wethers.	Total.
Blackfaced,	50	21	24	38	9	142
Cheviot,	38	30	33	30	...	131
Border Leicester,	40	6	24	...	...	70
Long-woolled other than do.	12	6	15	...	...	33
Shropshire,	24	24	27	...	...	75
Short-woolled other than do.	8	6	6	...	...	20
Half-bred,	7	9	12	...	3	31
St Kilda,	1	1	...	1	...	3
Total,	180	103	141	69	12	505

Swine.

	Boars.	Sows.	Pigs.	Total.
Large breed,	4	3	9	16
Black or Berkshire breed, . .	2	1	...	3
Middle White breed,	2	5	6	13
Total,	8	9	15	32

Poultry—144 entries.

Dairy Produce—Butter, 72 entries; Cheese, 74 entries.

Implements—1639 entries; 130 stands.

The following is a comparative view of the exhibition of stock and implements, the premiums offered, and the receipts (gate-money and catalogues) of each of the seven shows at Dumfries:—

Year.	Cattle.	Horses.	Sheep.	Swine.	Poultry.	Dairy Produce.	Implements.	Premiums.	Receipts.
1830.	180	62	247	19	...	...	18	£353	£163
1837.	181	77	512	15	...	31	36	650	382
1845.	297	75	537	62	101	88	143	900	440
1860.	298	166	558	54	216	195	911	1500	1275
1870.	374	171	817	76	402	180	1873	1600	1897
1878.	357	328	621	39	303	235	2578	2763	3308
1886.	287	312	505	32	144	146	1639	2583	2314

IMPLEMENTS SELECTED FOR TRIAL.

1. *Autumn and Spring Cultivators.*

The following report was submitted on the autumn and spring trials of implements for the cultivation of land intended for a green crop exhibited at Aberdeen Show in 1885. The judges were Messrs James Hay, Little Ythsie, and Ranald Macdonald, Cluny Castle, along with the Convener of the Machinery Committee and the Society's Engineer:—The trial of the implements entered for autumn cultivation took place on the 6th of November 1885 on the farm of Middlefield, near to Aberdeen, occupied by Mr Reith. Thirteen implements were forward and competed. These were—No. 32, a plough, and No. 34, a patent grubber, in catalogue of implements, Aberdeen Show, made by William Craig, Old Meldrum; Nos. 54 and 55, two ploughs with attachments, made by Thomas Corbett, Shrewsbury; No. 177, a plough, made by J. Bisset & Sons, Blairgowrie; No. 413, a plough, made by Macdonald Brothers, Portsoy; No. 452, a plough, made by G. W. Murray & Co., Banff; Nos. 726, 732A and 732B, ploughs, and No. 731, a double-furrow plough, made by George Sellar & Son, Huntly; No. 789, a plough, made by William Webster, Milbrenx, Fyvie; and No. 795, a plough, made by D. Whitecross, Banff. The day was very favourable, and the land in dry condition. The nature of the soil was light and friable, on a hard subsoil, and comparatively free from couch grass and such weeds. This was to be regretted, as there was little difficulty to encounter, and the particular merits of the implements in cultivating strong turnip land, as set forth in the conditions, were not possible of determination. After a very full and careful inspection, and testing of draught by the dynamometer, the judges came to the determination that Nos. 54 and 55, both made by T. Corbett, Shrewsbury, made the best work, and that after these Nos. 177 (J. Bisset & Sons), No. 413 (Macdonald Brothers, Portsoy), Nos. 731 and 732B (George Sellar & Son) were most meritorious. As the conditions of trial set forth that a second examination should be made in the spring of the land cultivated by the implements, the final decision was left over till then. On the 7th May the second inspection took place, when the land, which had remained untouched since the trial in November, was cultivated across the plough furrow by grubbers and harrows. The weather was again most favourable, and the soil dry. This second inspection confirmed the judges in their opinion that Nos. 54 and 55 had made the best work, and of the others, that No. 732B—a plough made by George Sellar & Son, Huntly—came next in merit. The judges therefore recommend that the prizes be awarded as follows:—1st

prize of £15, to No. 54; 2nd prize of £10, to No. 55; 3rd prize of £5, to No. 732B.

The trial of the implements entered for spring cultivation took place on Mr Milne's farm of Mains of Esslemont, near to Esslemont Station, about 15 miles north of Aberdeen. The weather was particularly fine, and the land in dry condition. Unlike the soil operated upon in the autumn, on this occasion it was peculiarly well suited for testing the capabilities of cultivating implements, being of a strong retentive nature, and thickly planted with couch grass. The 16 implements, same as exhibited at Aberdeen Show, were forward and competed—No. 8, a five-tined grubber, made by J. D. Allan & Sons, Dunkeld; Nos. 23 and 24, three-tined grubbers, made by Auchinachie and Simpson, Keith; No. 34, a patent grubber, made by William Craig, Old Meldrum; No. 56, a plough with a revolving harrow attached, made by T. Corbett, Shrewsbury; No. 267, a five-tined grubber, and No. 268, a three-tined grubber, made by J. Harvey, Kinmundy; No. 414, a five-tined grubber, and No. 416, a set of drag harrows, made by Macdonald Brothers, Portsoy; No. 455, a plough, made by G. W. Murray & Co., Banff; No. 731, a double-furrow digger; No. 733, a five-tined grubber; No. 734, a three-tined grubber; and No. 738, a set of drag harrows, made by G. Sellar & Son, Huntly; No. 759, cultivator harrow, made by John Scoular, Stirling; and No. 791, a grubber, made by W. Webster, Milbex, Fyvie. After a careful inspection, and testing of draught by the dynamometer, the judges selected the following, which they considered the most deserving, for the second trial on ground of even a still more clayey and difficult nature:—Nos. 34, 56, 268, 731, 734, and 791. The decision of the judges regarding these was that the 1st prize of £20 be given to No. 56, a plough with revolving harrow attached, made by Thomas Corbett, Shrewsbury. This implement did its work in a most satisfactory manner, stirring the soil very thoroughly, and bringing the couch grass to the surface, and being also of light draught. Second prize of £10 to No. 791, a grubber made by William Webster, Milbex, Fyvie, an implement of much merit, which made excellent work, but was of heavy draught.

The Board approved of the report, and awarded the premiums as recommended.

2. Turnip-Thinners.

The trial of turnip-thinners entered for the Dumfries Show took place on the 2nd of July at Niddrie Mains, Liberton, Mr T. M. Skirving having granted the Society leave to have the trial on his farm, when three machines came forward, namely—

(1) By Major-General Briggs of Strathairly, Largo, turnip-

thinner, invented by exhibitor, and made by Balfour & Son, Overstone, Pittenweem Price, £7, 15s.

(2) By Thomas Hunter, Maybole, self-acting double-drill revolving turnip-thinner. Price, £12.

(3) By Alexander Newlands & Son, Linlithgow, turnip-thinner, invented by Mr Wardlaw, Dunfermline, and made by exhibitor. Price, £12.

The judges—Messrs John Munro, St Cuthberts, Melrose; Alexander Dudgeon, Easter Dalmeny, and John Kerr, Ferrygate, Drem—decided unanimously to recommend to the Directors that the machine exhibited by General Briggs is entitled to the prize of £15 as a combined machine, being both a scarifier and a thinner, and sold at a moderate price.

The Board approved of the report, and awarded the premium as recommended.

3. *Sheaf-Binding Reapers at Dumfries, 1886.*

We beg to report that we met at Dumfries on Monday, 6th September, and proceeded that afternoon to make, according to the printed instructions issued by the Society, a preliminary investigation on the mechanical construction of the reapers which had come forward to compete.

The reapers forward were the following:—

Nos. 347 and 349 in catalogue of implements, Dumfries Show. These machines were entered and made by James and Frederick Howard, Bedford, and are similar in construction, with the exception that the former cuts 5 feet 3 inches and costs £52, 10s.; while the latter cuts 4 feet 3 inches, and costs £45. The driving wheel in both is 40 inches diameter and 7½ inches in width.

No. 370 in catalogue, entered and made by the Johnston Harvester Co., London, price £52, 10s, cuts 5 feet 3 inches; diameter of driving wheel, 40 inches, and width, 8½ inches.

No. 774 in catalogue, entered and made by Walter A. Wood, London, price £50, cuts 5 feet 3 inches; diameter of driving wheel, 36 inches, and width, 9 inches.

Nos. 1624 and 1625 in catalogue, entered and made by Richard Hornsby & Sons, Limited, Grantham. The price of the former is £52, 10s., cuts 5 feet 3 inches; diameter of driving wheel, 36 inches, and width, 9 inches. The price of the latter is £50, cuts 5 feet 3 inches; diameter of driving wheel, 33 inches, and width, 9 inches. These machines are for the most part similar in construction, but different as regards the knoter.

On Tuesday, 7th September, after completing the investigation of the machines, interrupted by the heavy rain of the previous evening, we had the various reapers tested for draught

in and out of gear when not cutting. Thereafter, about one o'clock, all were started to cut in a field of oats adjoining Maxwelltown Station, on Mr Thomson's farm of Lochfield, each machine having by ballot a separate piece allotted to it to complete, which occupied the whole of the afternoon. The field was of an undulating character, and in some parts the soil was of a soft and spongy nature. The crop was very unequal, much of it being laid and somewhat twisted, while portions were light and standing. Much rain had fallen the previous days, and the weather during the trials was very stormy, with occasional heavy showers. Altogether the circumstances were adverse, and well suited to test the capabilities of the reapers under disadvantages. It was intended, and two attempts were made, to proceed with the further trials of the machines on Wednesday, 8th September, but the wet and stormy character of the weather prevented anything being done throughout the whole day. On Thursday, the 9th September, though the weather was by no means propitious, and the grain far from dry, an early start was made, and the trials were brought to a conclusion shortly after mid-day. On this occasion the reapers were tested one after another, in equal circumstances, in an adjoining field of oats on the same farm. The piece selected on which to conduct the trials was in places abruptly undulating, and the crop of grain was very varied, some portions being heavy and almost flatly laid to the earth, while other portions were thin, short, and very weedy. As the trials were appointed by the Society for the purpose of testing the capabilities of sheaf-binding reapers "to work on hilly and uneven ground, and amongst laid crops of grain," we consider no better opportunity could have been got for the purpose than that we had.

We have to report, as the result of our most careful efforts to thoroughly test the different reapers, that we consider No. 1624, R. Hornsby & Sons, Limited, and No. 774, W. A. Wood's, made decidedly better work than the others; and that while even in their case there was, in our opinion, room for improvement in the way in which the machines were able to form and separate the sheaves among grain which was lying away from the knives or across the line of cut, we consider that these two machines made, on the whole, even in adverse circumstances, sufficiently good work to warrant us in recommending that the £100 offered by the Society should be awarded to them in such proportions as their relative merits, given in detail under the points specified for us by the Society, as follows, would warrant, viz., £55 to No. 1624, and £45 to No. 774.

Points of Merit.	Wood No. 774 Price £50.	Hornsby & Son. No. 624 Price £52, 10s.
1. Mechanical Construction — 200 points divided as follows :—		
Durability and simplicity of construction (50)	40	45
Ease of adjustment and management (50)	40	45
Lightness of draught in gear and out of gear (50)	25	35
Price (50)	38	35
2. Cutting—		
Closeness, cleanness, and evenness of cut (400)	400	400
3. Binding—200 Points divided as follows :—		
Certainty of binding (40)	40	40
Facility to alter size of sheaf (60)	28	30
Uniformity in size of sheaf (40)	40	40
Compactness, form, and balance of sheaf (60)	40	40
4. Delivery of sheaf (50)	40	43
5. Freedom from shedding (50)	45	45
6. Draught in cutting (100)	90	87
	<hr/> 866	<hr/> 885

With regard to the other machines, we do not consider it necessary or desirable that their relative merits should be given by us in points, only would we remark that all of them made fairly good work under most trying circumstances, and in no case did any one of the reapers come to a standstill from any breakage during the whole course of the trials.

(Signed)	JNO. SCOTT DUDGEON.
"	JAMES LITTLE.
"	JAMES M'CRIE.
"	J. SHAW.
"	ANDREW LUSK.

26th October 1886.

The Board approved of the report, and awarded the premiums as recommended.

4. Manure Distributors at Dumfries, 1886.

We beg to report that the trials took place on Wednesday, 28th October, at Lochvale, near Dumfries, on two fields kindly granted for the purpose by Mr Lusk, the proprietor and occupier. The trials lasted from about 10 A.M. till 3.30 P.M., and were conducted under most favourable circumstances.

For the most efficient and economical machine for the regular, even, and continuous distribution, either broadcast or in rows, as desired, of all kinds of superphosphates, and other artificial manures, and with easy adjustment for varying the rate of distribution—1st premium, £20; 2nd, £10—the following competed:—

1. Chadborn & Coldwell, Manufacturing Coy., 223 Upper Thames Street, London.—No. 44, "Patent Excelsior Drill." Price—D No. 1, 8-coulter, 8-inch, £28, 10s.; D No. 2, 9-coulter, 7-inch, £30; D No. 3, 9-coulter, 8-inch, £31; D No. 4, 10-coulter, 7-inch, £32; D No. 5, 11-coulter, 7-inch, £34.

2. Thomas Sherriff & Co., West Barns, Dunbar.—No. 650, manure distributor for drill or broadcast. Price £15.

3. Ben. Reid & Co., Aberdeen.—2 machines—(1) No. 855, manure distributor for artificial manures, 10 feet wide. Price £16. (2) Manure distributor and land roller combined, 8 feet wide. Price £16.

After a thorough and exhaustive trial of these machines with various kinds of artificial manures, we consider that none of them so fully complied with the conditions set down by the Society, viz., "To distribute effectually *all kinds* of superphosphates and other artificial manures," as to warrant us in awarding the specified premiums. All failed in satisfactorily distributing superphosphate of a raw dampish character. At the same time, we consider No. 855, made by Ben. Reid & Co., Aberdeen, complied with the conditions so efficiently as regards the distribution of superphosphates and other artificial manures *in ordinary dry condition*, that we have to recommend that a prize of £15 should be awarded to it. We think it right to take some notice of No. 44, "Patent Excelsior Drill." This machine, which is of American make, displays much ingenuity and mechanical skill in the construction. It is a combination implement, and in addition to appliances for distributing artificial manures, it is also fitted with appliances for at one and the same operation sowing all kinds of grain in the drill, and also clover and grass seeds. Competing and being tested by us on this occasion simply as a manure distributor, it was necessarily placed at considerable disadvantage. The manner in which it distributed most of the manure experimented with was so satisfactory that we think were its makers to fit up a machine of considerably greater width, solely for manure distribution, and supply the same at a moderate cost, it would be found a valuable auxiliary on the farm.

For the most efficient and economical machine to be attached to and worked in combination with a common ridging or other plough for the regular, even, and continuous distribution in the furrow of all kinds of superphosphates and other artificial

manures, and with easy adjustment for varying the rate of distribution—1st premium, £15; 2nd, £5.

The following competed:—

1. Thomas Sherriff & Co.—No. 651, manure distributor attachable to plough, with wheel marker. Price £3.

2. Ben. Reid & Co.—No. 857, manure distributor and drill plough combined. Price £8.

Neither of these machines do we consider of sufficient merit to have a premium awarded them.

(Signed)	JOHN SCOTT DUDGEON.
"	J. SHAW.
"	JAMES M'CRIE.
"	JAMES LITTLE.
"	ANDREW LUSK.

The Board approved of the report, and awarded the premium as recommended.

THE IMPROVEMENT OF HILL PASTURE WITHOUT BREAKING IT UP.

By ALEXANDER MACDONALD, Sub-Editor, *North British Agriculturist*.

[*Premium—Ten Sovereigns.*]

Introduction.

A TREATISE on such a subject as the above requires no lengthened introduction. It is presumed that pastoral farmers do not require to be told at this time of day that the improvement of hill pasture is a matter of national importance. It must be as apparent to all of them, as it is to us, that a large extent of the thirteen million acres of Scottish mountain-land might be converted into useful and remunerative pasture. True, some good work has been done within the past ten or fifteen years in the direction of "making two blades of grass grow where only one grew before," but this only goes to show more forcibly the importance of further improvement. The land that has been drained and limed, and so increased in fertility and value, affords, by the additional support it gives to the sheep stocks of the country, sufficient foretaste of the good that would flow from greater enterprise in the improvement of pasture.

Pastoral farmers have had and are having their share of the deep-seated and protracted agricultural depression, but they are not far removed from a lengthened succession of tolerably good and prosperous years. In view of this fact, it cannot be said that they made the most of their time for twenty or thirty years

previous to 1880 in improving the value of their holdings. Though we venture this remark, however, it might be too much to assume that tenant-farmers are solely responsible for the neglect. Owners as well as occupiers—and in some cases the owners occupy their own land—are to blame, for it could hardly be expected that a tenant with probably only the security which the terms of a nineteen years' lease provides, would show great enterprise in the fertilisation of mountain-land. Such an operation involves a considerable outlay, and this outlay should, in our opinion, be mutually borne by landlord and tenant. By landlords advancing their tenants sufficient means upon stipulated interest, say 4 per cent., a powerful impulse would be lent to the development of pastoral resources of the country. The Agricultural Holdings Act (1883), defective though it is in many respects, will impart greater confidence to tenants in the expenditure of money in the fertilisation of pasture lands; but the low price of wool, combined with the recent fall of from 15 to 30 per cent. in the price of sheep, debars them from taking advantage of the security thus extended them. For the present they have difficulty in making ends meet with the utmost economy; and while this lasts there can be little hope of the increased attention being directed to the improvement of hill pasture which it so well deserves.

It may not be out of place to mention that there are at present (1886) close on a hundred pastoral farms unlet in Scotland—in addition to those in the owners' occupation—representing an acreage of about 52,076, a fact mainly attributable to the long-continued agricultural depression.

The primary consideration in the practical application of lime or drainage to land is the nature of the soil and climate and the plants the former produces. Another point to be kept in view—and if not known to be ascertained by practical experiment in each individual case—is the effects of the various agents employed for the improvement, on the different plants existing. It may be desirable, or in fact necessary, if possible, to retain certain varieties of grass and exterminate others. But how, it may be asked, is this to be accomplished? We do not profess to be able to give a direct answer to the query, but it is now pretty well known that lime when applied to certain soils has the effect of wearing out coarse varieties and promoting finer qualities of grass—a fact to which I can not only testify from personal experience, but which is borne out by the information I have gleaned from practical sheep farmers in all parts of Scotland.

The process of improving hill pasture, however, is so materially affected by local circumstances that a general recommendation as to the simplest and most effective course to pursue for its

extension would be utterly impracticable. Difficulties arise peculiar to each individual case, and it is therefore incumbent upon farmers respectively to consider for themselves how these can best be overcome. But in all instances, and under all circumstances, experiments are synonymous in the one respect at least, that their results in a great measure depend upon the determination and wisdom of the initiatory steps—steps which must take their key-note from practical experience. By the initiatory steps I mean the first efforts in the direction of improving pasture land on a large scale; but before attempting this farmers should have some knowledge of the effects of such agents as they mean to apply by having previously applied them to similar soils and grasses. Experiments in this way may be the means of preventing a waste of money; while, on the other hand, their results might suggest other means than those intended to be used better calculated to effect the desired improvement.

It would be going beyond our limits, and needlessly occupying valuable space, to dilate upon the comparative merits and demerits of the numerous varieties of grass to be met with on hill pastures, farther than is necessary in showing the more important plants that may benefit or suffer from the systems commonly adopted for the improvement of hill land—that has been already fully discussed by Professor Wallace in the 16th volume of the Society's *Transactions*.

In dealing with the subject proper of this treatise, we propose to consider it under the following heads:—(1) Draining; (2) Surface Liming; (3) Heather Burning; (4) Shelter; (5) Fencing; (6) Mole-Catching; (7) Bracken-Cutting; (8) Spring Irrigation; (9) General Remarks; (10) Appendix.

Draining.—In improving hill pasture on certain soils, draining, if the land be wet, is essential to the successful achievement of the object in view. There are soils—notably very wet land—which would lose instead of gain vitality from draining on any principle. For example, the effect of draining upon loose, mossy soil, where the surface is green, cannot be over-estimated: but in the case of solid peat moss overrun with heather (*Erica vulgaris*), deer hair (*Scriptus cæspitosus*), draw-moss (early moss), or cotton-grass (*Eriophorum vaginatum*), and stool-bent (*Agrostis stolonifera*), the results invariably prove adverse in the extreme. During the bleak and “hungry” months of spring, these grasses—known in some parts of the north of Scotland as “month” or draw moss—constitute the principal food of hill stocks. Sheep can subsist on such soils, when, at this early season, they would starve on others, and it is therefore unwise in most cases to endanger the vitality of its produce by draining the land. As the season advances, this soil

becomes dry, and the pasture consequently parched and unpalatable; but as it deteriorates, other portions of the hill-range improve, and the sheep, if left to look out for themselves, readily discover this. They rarely need to be transferred to other portions of the pasture, provided there is a supply of fresh grass to induce them to "make shift" for themselves. In short, except with the view of removing stagnant water, advantage can seldom, if ever, be derived from draining solid moss land.

Soil composed purely of stiff clay, with a sloping surface, covered by the coarser grasses and "bents," may be susceptible of amelioration from widely separated drains; but it is also liable to be injured by too close draining. Where such soil rests on a subsoil of stiff, retentive clay, and is flat on the surface, draining is indispensable. "This land," says an intelligent writer, "improves by close draining; the sprott diminishes, and in some situations, where the soil can be thoroughly dried, it disappears altogether, its place being occupied by a thick covering of fine grass mixed with white clover (*Trifolium repens*), and affording pasturage of the best description." These remarks we fully indorse. Another variety of soil that invariably benefits inestimably from close drainage is loose, loamy land, which is usually productive of rush and sedge (*Carex*),—food that is invaluable in spring in eking out the scanty subsistence of high-land flocks. Other compositions of soil in certain situations may also be drained with advantage, but the foregoing form the principal soils underlying hill pastures.

Even those soils which, as a rule, require close draining are very liable to be overdrained; each farmer has to be guided by his own judgment in estimating the extent to which this system of improvement should be carried out. Overdraining has its attendant evils, not only as regards the deterioration of the pasture, but also the health of the sheep.

The same observant writer from whom I have already quoted, says:—"In laying down general principles for the drainage of a sheep farm a serious error might be committed, if special reference was not had both to the extent and quality of the dry, steep land that may be upon it. Where there is a large proportion of dry hard ground, whether covered with heather or green lea land overrun with moss and coarse grass, and upon which the growth is late in spring, the wet land should never be so thoroughly dried as upon farms where there is either a wider extent of deep and damp soil, or where the lea land is good and sharp, the plants finer, and the growth comparatively early." The truth of this statement cannot be doubted. The elevation of a farm, its exposure, and the nature of the climate, are important points to be kept in view. Farms situated, for example, in western districts of Scotland,

from the rainy character of the climate, require a more efficient drainage than those in naturally drier parts of the country. Three systems of draining have been adopted, but one of them is comparatively new. Less than half a century ago the prevailing method was to lay the drains almost straight across the land. At a more recent period a system of laying them right up and down the hill was introduced; while at a still later time farmers struck them out exactly between the two extremes. This later method is, as a rule, the most serviceable; still it was long in becoming a general practice. Even yet the old systems of draining exist to some extent, although they have been largely superseded by the newer methods on the more important farms. In the old drains stones were used, and are so still to some extent, but are being largely replaced by tiles, which are found to answer the purpose more efficiently, and to involve less labour and expense in maintenance. Tiles were first introduced into extensive use in Peeblesshire, and have been growing in public favour for the past twenty-eight or thirty years. An objectionable feature in tile-draining in Scotland, however, has been the use of too small pipes. When under-sized, tiles are apt to become stopped, and to require frequent cleaning. They should never be less than $2\frac{1}{2}$ inches for tributary drains, and 4 inches for "leaders." By procuring large tiles at the outset, a considerable subsequent expenditure may be obviated, and a more satisfactory and durable drainage secured. The size of surface drains, like their distance apart, has to be regulated by the nature of the soil, the elevation, and the character of the surface of the farm. A common size for shallow drains on stiff clay land is 20 to 22 inches wide at the top, 8 inches at the bottom, and from 16 to 18 inches deep. But where the soil is mossy, drains are cut 3 to 4 inches deeper, and some 6 inches wider at the top, than drains on stiff clay and tilly land. On the latter the distance between the drains varies from 30 to 50 feet, and in some cases more. The cost of cutting drains depends to a large extent on the character of the land. The ordinary cost of cutting surface drains ranges from 1d. to 2d. on soft ground; but where picking is necessary, the expense runs as high as from 2d. to 4d. per rood of 18 feet. Tile drains are much more expensive, the depth in this case varying from $2\frac{1}{2}$ to 3 feet. Open and close drains are both used on almost every holding, but the latter is undoubtedly the preferable system; and it would doubtless be more universally adopted if landlords gave their tenants more liberal help and encouragement,—advancing cash, as we have already suggested, on interest. Open drains require frequent cleaning out—generally every six or eight years—and thus involve a considerable outlay.

Finally, it is proved beyond doubt that by a judicious process

of draining, hill pasture might be substantially improved. Draining has already done good work in Scotland, especially over the southern counties. Its beneficial effects are not only shown by the luxuriant herbage with which it displaces coarse innutritious grasses, but also in the general health and constitution of the sheep. In this respect draining is known to have a marked influence especially in diminishing rot, to the prevalence of which wet land is unquestionably conducive.

Surface Liming.—A large proportion of the permanent pasture before it can be advantageously limed must necessarily be drained. Applying lime to wet land is an error into which farmers are liable to fall. If the soil is of a boggy nature, draining is the first step to be taken towards improvement. A very large extent of pasture has been limed within the past thirty years over the southern counties of Scotland, notably the counties of Lanark, Dumfries, Selkirk, Peebles, Ayr, and Roxburgh, with, it may be said, profitable results. Lime has a wonderful effect when properly applied to light lea land, except where land has been cropped, as well as to all soils that are naturally dry. It tends to exterminate moss and noxious weeds, and it brings into action the dormant surface of the soil, and thus encourages the growth of nutritious grasses. By a process of liming, instances could be mentioned of hill pasture having been raised 10s. per acre in value.

The duration of lime in the soil is unequalled by that of any other manurial ingredient. Farm-yard and certain classes of artificial manures—when applied after the land has been dressed with lime—have more immediate action when thoroughly incorporated with the soil, but neither of them—not even bone manure—are so lasting in their effects. I have seen on several farms, strips of pasture limed 20, 25, and 30 years previously, much greener and richer than adjacent patches that had not been top-dressed in this way, and I have come to the conclusion that judiciously applied lime is the most effectual top-dressing hill pasture can receive. Its expense is, however, a very great hindrance to its universal use. On farms situated near to railway stations or in proximity to limekilns, no more beneficial stimulant can be employed in the improvement of pasture lands; but where there is a high carriage to pay in addition to the cost of the lime, it is too expensive to use extensively.

As to the cost of liming it would be difficult—indeed impossible—to estimate the average outlay per acre, inclusive of expenses connected with its application, but it may be mentioned that the present value of lime at the kiln varies from 7s. to 10s. per ton. The average allowance per imperial acre is as nearly as possible 5 tons.

Diverse opinions exist as to the best system of applying lime

to the soil. Many farmers, in fact the majority, empty it in small uniform heaps here and there over the soil, and then spread it as equally as possible; while others gather it into large heaps, containing perhaps as much as 16 to 18 tons, before spreading it. The latter plan is supposed to enable farmers to spread the lime more uniformly than it is possible to do through the small-heap system, while it is alleged in favour of the large heaps that the lime "falls" more thoroughly than when in small heaps. In some cases farmers economise the expenditure in lime by mixing it with good rich soil, subjecting it to the action of the air, and applying it in the shape of compost. This, however, involves an enormous amount of labour, and the expense of doing the work is almost equal to the saving of lime effected.

Lime gives still another advantage when applied to soil. It has been conclusively proved by some of our most intelligent and observant flockowners to exercise a beneficial influence on the health of stock. At one time "pining" was very common in several of the counties already mentioned. Since so much of the pasture has been improved through the agency of lime, however, the loss from this disease has been greatly diminished. This is doubtless due to the fact that more succulent grass is available on almost every farm than was the case at one time, and that it is thus more digestible than the coarse, hard, unpalatable grasses which have been destroyed by liming.

Heather-Burning.—It is the belief of many practical sheep-farmers that no law connected with the agriculture of Scotland is more defective than that regulating the burning of heather. It is indisputable that certain portions of hill pasture might be more efficiently improved by the use of a lucifer match than by the most expensive process of manuring or draining, but for the restrictions as to the legal time for heather-burning. Under present regulations a tenant farmer is only allowed to burn heather to the 11th of April, and it must be perfectly evident to all that heather is not in a proper condition, after a severe wet and protracted winter, for burning so early. There is a clause in the parliamentary Act that enables a tenant, provided he gets the consent of his landlord, and pays one shilling to the sheriff of the county for registration of such consent, to burn on to the 25th of April, but this is a very unsatisfactory system.* The impression that rank heather is essential for the protection of game has been found to be incorrect. It is prevalent in many quarters, but it is now generally allowed that short and young heather is more conducive to their healthful propagation.

* It would be useless to expect that heather burned much later than 11th April would be of much value as food that year, but the time might be extended a couple of weeks with impunity and advantage.

Grouse nests are seldom to be found amongst very rank old heather, and it is universally known that after the young birds are hatched, they invariably go for food to the newly-burned moors, and where they can bask themselves in sunshine.

The great objection to the prohibitory regulations as to burning from a flockmaster's point of view is, that they prevent the consumption of old heather when it is desirable to destroy it. For grazing purposes, as well as for grouse, heather and "deer-hair" should be burned periodically. That young heather is essential to the well-being of sheep and game cannot be doubted. After it becomes old and largely developed into woody fibre, it is not only inedible, but deleterious to the land on which it grows. The latter becomes barren, and after its covering is burned, it is less productive than if the heather had been earlier consumed. It is not advisable, however, to keep heather too much down in low-lying parts where sheep are accustomed to be kept during the severest days of winter, because rank heather or whins—(whin-growing is resorted to in not a few cases for this purpose)—enables the animals to break the surface of the snow more easily in search of food, or have it broken for them by means of harrows or drags.

Shelter.—It is an important matter, especially on exposed pastures, to provide adequate shelter for sheep. In this respect there is great room for improvement. On many farms little or no attention has been directed to this matter. It is an old but true saying, that "shelter is half meat for sheep," and this being so, the importance of protecting the weather-beaten flocks from the severity of winter storms cannot be overestimated. The more advanced farmers have erected stone dykes or "stells" on various parts of their farms, while on the farms belts have been planted. The "stells" are usually round in form, built of stone, and unroofed. The idea of planting clumps of trees here and there over the pasture is favourably entertained in some quarters, though opposed in others, and will probably be more generally appreciated in the future. The plantations are usually grown on dry heathery ground adjoining pasture, rough and suitable for wintering sheep, such as moss, bent, spretts, or rough heather.

Fencing.—Unless sheep have absolute freedom, which is indispensable for their healthy and muscular development, there is little hope of farming with profit; and to secure this, nothing is more necessary than the enclosing of pasture. It is not many years since the fencing of hill pastures was adopted to any extent, and it is still very imperfectly carried out. The better class of farms are, as a rule, pretty substantially enclosed, but the majority in Scotland are neither enclosed, subdivided, nor laid off so completely as could be desired. The first thing

to procure in the direction of fencing is a complete enclosure of the holding from all surrounding pastures and farms; then it would be well, in order to carry on sheep-breeding successfully, to subdivide the pastures into parks for convenience during the rutting, lamb-weaning, and fattening seasons.* As a rule, wire constitutes the principal fence, but several of the important farms in the south of Scotland are to a large extent fenced with dykes. The expense of fencing is, doubtless, very considerable, but, from its effect upon the sheep, it soon compensates the farmer for the expense thereby incurred. Moreover, it prevents animals from straying away from the flock. And what is of still greater importance, it resists the invasion of strayed sheep from other flocks, and may thus be the means of preventing an attack of contagious skin disease or "foot-rot," from which much injury invariably flows. Where there is an abundance of stones at hand, dyke-fencing is, if anything, preferable to wire-fencing for more reasons than one. For one thing, it is less liable to suffer from heavy snowstorms or frost than wire, while, as a matter of course, it affords more shelter to sheep. Dyke-fencing is specially commendable on exposed ground, and if it cannot be raised to a sufficient height conveniently, a wire or two could, and in innumerable instances are, run along the top of it in order to prevent the sheep from leaping over.

Mole-Catching.—To many this operation may seem trivial in the improvement of hill pasture, but such is by no means the case. Moles are generally very destructive on pastures extensively intersected with open drains, and a considerable expense is annually involved in keeping them down. They do not work in all soils, but are plentiful, as a rule, in good land in want of draining. And they even work havoc occasionally to close drains by displacing the tiles, except where these are pretty deep. Unless moles are destroyed, where numerous, it is needless to expect that "sheep-drains" will dry the land sufficiently. Water from them is diverted in all directions through mole-holes, besides, the gentleman in velvet often does mischief in breaking down the sides of drains, and thus interrupting the flow of water.

Bracken-Cutting.—Many sheep farms are overrun with bracken, which does nothing more or less than encumber the ground. As food, bracken† is valueless, except as silage,† while the benefit derived from its use as bedding for stock, for which it is generally used, is not equivalent to the loss of pasture

* In suggesting this, however, we would impress upon farmers the importance of seeing that the subdivision does not deprive their stock of variety of food or shelter. Where there is the remotest likelihood of such a result, we should tender them the advice that *Punch* offered to those about to marry—don't.

† Bracken has this year been tried as silage, in which form it is well relished by cattle.

caused by its extensive growth. This being so, and in view of the fact that the same land cannot produce both grass and bracken simultaneously, because the latter checks the growth of the former, it is desirable to exterminate bracken, if possible, or at least to keep it in check. How to wear it out effectually has not yet transpired, but various methods of keeping it down are tried. Some farmers destroy the plants when young by the application of link-harrows, while others, the majority, cut them with scythes about the end of July, and remove them to the farm steading or sheep cot, where they are used in the manner already mentioned. Others believe that cutting in spring for two or three successive seasons destroys bracken; but on a large scale, and on uneven ground, the expense is prohibitory.

Spring Irrigation.—On hill pastures abounding with springs, or what is proverbially termed “well-eyes,” good work is done by irrigation; that is, by diverting or spreading these springs, where practicable, over hard and barren ground in their vicinity, and thus promoting a supply of fresh nutritive grasses. Such overflow water has a wonderful influence in fertilising sterile ground, and this system might, we think, be more widely adopted. Of course, it is not practicable on every farm on which these springs are found, but it is necessary in most cases to have them removed or drained by some means. Where they exist there is invariably a good supply of fresh vegetation, which sheep are naturally fond of, and in going into them many animals have been drowned, as the depth of such springs is very deceptive. Conduits should be cut sufficiently deep to drain away the water as it rises, unless in cases where some advantage may be derived from retaining a certain volume, with a view to insure a more uniform supply of water for irrigation purposes. These springs have long been considered conducive to rot in sheep when numerous and undrained, and it has also been found that irrigated pasture, though good as hay, is not always safe grazing for sheep.

General Remarks.—So much has already been written regarding the various systems of improving hill pasture, that there is little remaining to be said here. But there are still one or two points which we may appropriately allude to. One of these is the grazing of cattle on hill pasture with a view to keeping down the excessive growth of “sprat” and other inferior plants. There are several farmers in Scotland whose experience has led them to attach considerable importance to this mixed system of grazing. I am aware of one instance at least, in which an enlightened Perthshire agriculturist, who has been in the habit for more than a quarter of a century of turning cattle on to rough hill pasture in the end of May or beginning of June

with good results. The sheep grazed after cattle were not only healthier, but a larger number of them could consequently be kept. Instances of the successful grazing of cattle on hill pasture early in summer are also available in various other parts of the country, but many, if not indeed the majority, of south country farmers disapprove of this practice. But great diversity of opinion exists on this point.

There have been loud complaints in recent years about the deterioration of hill pasture, which has been attributed to various causes. It is difficult, indeed impossible, to speak with any degree of certainty as to the real cause, but it is evident to all concerned that bad seasons have had a hurtful influence on pastures. Cold wet summer seasons, in the absence of sufficient sunshine, are blamed for the supposed deterioration, and we believe justly enough. All kinds of crops suffer from such adverse meteorological circumstances, and we are therefore inclined to homologate an intelligent Inverness-shire farmer's opinion, who writes:—"I attribute the deterioration of pasture chiefly to a succession of cold wet summers;" and adds, "heavy rainfalls have a strong tendency to encourage the growth of fog in green pasture. Take, for instance, a farm of arable land in the west of Scotland, which, though it is laid out with clovers and ryegrass, or other grasses, in a year or two the clover will disappear, and only the grasses indigenous to the soil and climate will remain, along with a thick sward of fog. A farm laid out in this manner in Badenoch, or in almost any inland or east coast district, will retain the clover and other fine grasses for years, and it is only when grass becomes very old that fog appears." It was long a common impression among sheep farmers in the north of Scotland that the most effective course of improving hill pasture, without breaking it up, was to pasture the sheep on rich arable grass for the greater part of the day, and turn them away to hill ground during night, as if the animals, like so many mechanical machines, could be controlled to retain and deposit their excrement as farmers desired. This course, however, cannot be regarded as either efficacious or economical; and though at one time common, is now practically obsolete.

The unanimous opinion of all concerned in hill pasture is obviously in favour of draining, liming, heather-burning, and fencing, as the four great essentials to its improvement without breaking it up; and that these, combined with shelter for sheep, form the only means by which any substantial improvement in that direction can be effected. That is certainly the inference to be drawn from the whole tenor of my treatise; and seeing that such operations are conducive not merely to the success of individual flockowners, but to the welfare of the

nation at large, it is very desirable that improvements of this nature should be—as they are in many, though not in all cases—achieved at the joint expense of landlord and tenant. There is as yet need for an extension of operations in this respect, and much additional good work would doubtless be accomplished if landlords advanced sufficient means to their tenants at moderate interest. An influential Mid-Lothian farmer, writing in reference to this point, says:—"The expense of such permanent improvements should not be borne by the tenant, but performed by the landlord at a fair rate of interest, and the landlord should be empowered to burden his estate with the expense of liming in the same way as he can at present legitimately do with the expense of draining."

The system of feeding sheep with artificial food, such as cake, is adopted on several important farms, and pastures are vastly improved in this way. Of the success of such a course we have a good illustration in the skilfully managed farm of Corshope, Mid-Lothian, tenanted by Mr George Riddell. Some fifteen years ago Mr Riddell abandoned cropping, and commenced to lay down his farm in grass. Since then he has extended the acreage of permanent pasture to close on 800 acres. In breaking new land, lime was liberally applied, which was followed by 7 cwt. to 10 cwt. per acre of bones sown along with turnips. The turnip crop was consumed on the field by sheep, along with a considerable quantity of cake, and then after being thoroughly prepared the land was sown with grass, on which cake has been eaten every year. Land that had been cropped before Mr Riddell entered the farm was limed after being laid down to permanent pasture, with good results. Mr Riddell also applied dung to pasture, and tried top-dressing on a small scale, but he does not think top-dressing with artificial manure profitable. The effects of his liberal treatment are not only durable, but most salutary in bringing up grass of a richer kind than is to be found on almost any other farm. Writing to us on the subject, Mr Riddell concludes thus:—"I have no hesitation in saying that the result is far superior to any top-dressing I have seen on the surface of hill pasture, but the expense is far too heavy for a tenant farmer, and should not be borne by a tenant alone."

APPENDIX.

Supplementary to what I have written from several years' personal experience and information gleaned from reliable sources, I give below the results of practical experiments and systems of improving pasture adopted on some of the more important farms in Scotland.

On the extensive pastoral farm of Overshiels, Mid-Lothian, the process of improving hill pasture has been going on for many years. The Messrs Archibald have been liberal and judicious in the management of their pasture. They recommend the application of lime to hill land, at the rate of from 4 to 6 tons per acre. The practice on Overshiels in applying lime has been different from that on many other farms. The lime before being spread is put into large heaps on the ground, each of which is calculated to lime three acres. The Messrs Archibald object to lime being emptied into small heaps in the belief that it cannot be equally spread. Nor does lime "fall" so thoroughly as it does when there is a large quantity of it in one heap. Some twenty years ago the top-dressing used by the *late* Mr Archibald consisted of a compost of earth and lime, but the process of mixing them, though simple, involved an enormous labour. A piece of land was first ploughed, and the lime then distributed over it, and worked into the ploughing by horse labour, after which the compost was carted over the adjoining pasture. With the view of testing the effects of top-dressing in this manner, a strip of land was kept in its natural conditions between parts that were limed. The improvement in the colour and quality of the pasture from the influence of lime became very apparent. The sheep took better to the limed than the unlimed pasture, which was decidedly the most productive. The Messrs Archibald recommend the use of larger tiles in draining than have hitherto been laid on the majority of farms. The distance apart has to be regulated by circumstances, but they consider 10 yards a good serviceable distance. The depth of such drains should not be less than 3 feet.

The farm of Glenbuck, Lanarkshire, which carries one of the finest sheep stocks in Scotland, has been vastly improved through liming and draining by its enterprising owner and occupier, Mr Charles Howatson. The greater part of it has been intersected with tile drains, most of them 18 feet apart, and others 36 feet. Between each of those, 36 feet apart, a shallow tile drain is sunk, and is found to do good work. The size of the tiles used is $2\frac{1}{2}$ inches, and the open drains, of which there are a great many, are 20 inches wide at the top, 18 inches deep, and 9 inches wide at the bottom. The cost of laying the drains 18 feet apart, and at the ordinary depth, was about £9 per acre. Mr Howatson recommends in cutting open drains that all stones or tree roots which may impede the spade should be extracted, and that the earth taken out be removed 3 feet off the side of the drain. Lime has been applied to the pasture at various times, costing, as a rule, 50s. per acre. By this system of top-dressing, the character of the pasture has been materially enriched and improved, and parts of it, which

were limed some thirty years ago, are still green and vigorous, while the adjoining land that got no lime is perfectly bleak and sterile. With a view to compare the results of an experiment in breaking up hill pasture, in trying to improve it, with the liming and draining of it without breaking it up, Mr Howatson trenched $2\frac{1}{2}$ acres, gave it 2 tons of bone manure, and sowed it down with grasses and clover, but it is not likely to prove successful. It cost nearly £17 per acre. Mr Howatson finds that ploughing, before top-dressing hill pasture, is no advantage whatever, while it incurs a considerable expense. The Glenbuck pastures are well fenced, chiefly with dykes, surmounted by a couple of wires.

On the farm of Listonshiels, tenanted by Mr Thomas Aitken, some 80 acres of wet, boggy land were drained at a cost of £7 per acre,—the drains on the wetter parts being 12 feet apart, and on the drier ground about 18 feet. This being done, about 30 tons of farm-yard manure were applied to the parts overrun with fog, while the less foggy portions got only about 20 tons per acre. This mode of top-dressing has given satisfactory results, though it is obvious, as Mr Aitken observes, that its effects are not so durable as those of lime. For a certain length of time, however, it answered as well. The dung was carted out and carefully spread in the months of October and November, and was thus exposed to the frosts of winter, which broke it down. This system of top-dressing was preferred to liming, in consequence of its comparative cheapness. In the higher districts of the country, such as that in which Listonshiels is situated, cropping is not extensively carried on, and hence farm-yard manure is of less value than it is where arable farming prevails. On this account it is less expensive than lime, which costs about 18s. per ton before it is spread on the ground. The highest lying land has been drained with "sheep-drains" 4 yards apart, and running direct down the hill. Generally these open drains require to be cleaned once every six years. They are cut 14 inches wide at the top, and gradually get narrower towards the bottom, which is usually about 8 inches wide, the depth of the drain being about a foot. Mr Aitken tried an experiment on about 14 acres of hard, heathery land, some 1400 feet above sea-level. On it he enclosed 60 wethers with sheep-nets, and gave them about 1 lb. of corn and cake each per day. This made a great improvement on the pasture, but the sheep did not thrive, and he stopped it. The impression on the pasture was observable for a year or two, but it has now almost entirely disappeared.

Mr Moffat, Gateside, Sanquhar, Dumfriesshire, secured a more abundant supply of pasture for his sheep by draining and straightening water-courses to prevent the flooding of low-lying

flat land, which he considers are the first steps to be taken in improving hill land. Next in importance to the above, says Mr Moffat, and what should never be omitted, is the enclosing of the whole farm. The improvement of hill pasture has received far too little attention in the past. Liming, if there is a kiln on the ground, or within easy distance, has a very beneficial effect; but if there is a heavy railway carriage to pay for lime, and a long cartage besides, Mr Moffat, speaking from experience, discourages its use. He tried, by way of experiment on a portion of his farm, 1 ton of half-inch bones in lieu of lime, which, however, proved a failure. Their influence upon the pasture could only be traced for a year or two, and, moreover, the sheep did not seem more fond of the pasture so stimulated than of that which got no treatment. Draining, fencing, and burning heather and withered grass, Mr Moffat considers the most effectual means that can be adopted for the improvement of purely hill pasture.

Mr Milligan, Hayfield, Thornhill, has improved his pasture chiefly by surface-draining. Of these he has cut over 80,000 roods. The land drained consists of strong loams, such as clay, growing sprat or rush, and black-topped land intersected with gravel beds. The drains range from 8 to 10 yards apart, and are not less than 20 inches deep. The price of cutting the drains on the land where no picking was required, in order to have them at a uniform depth, ranged from 1d. to 1½d. per rood; but where picking was required, the rood of 6 yards cost from 2d. to 4d. Mr Milligan has limed pastures both in Dumfries and Inverness shires with advantage, but does not recommend this process of top-dressing unless tenants are prepared to extend it over a considerable breadth of their farms.

The system of improving hill pasture adopted on the farm of Skelfhill, Hawick, by Mr Grieve, was as follows:—About 5 tons of gas lime was allowed per acre, costing about 6s. per ton at the railway station. Where the land was overrun with fog, the lime has done valuable work in converting this unpalatable sward into grass of much finer quality.

Mr Whyte, Hatton of Eassie, Meikle, finds properly laid surface drains to act powerfully in improving pasture,—making it richer, more tender, and capable of carrying a larger stock of sheep. He has occasionally made a durable impression on it, where practicable, by a process of irrigation. The hills in his locality abound with springs, and where these could be diverted on to hard sterile ground by means of small drains, they invariably had a very beneficial effect upon the pasture. Mr Whyte does not abide by a regular width in cutting drains. The distance apart varies from 8 to 20 yards, being regulated by the nature of the land. They are cut broader and deeper where the

ground is soft than where it is hard; the width varies from 18 to 24 inches at the top.

On West Loch, Eddleston, Peeblesshire, tenanted by Mr P. Melrose, about 300 acres of hill pasture were improved by tile-draining wet and boggy places, and liming at the rate of 15 bolls per acre. Of these, some 150 acres were broken up and put under a rotation of crops, consisting of one crop of oats, one of turnips, all of which were consumed on the land by sheep, and the land was then sown down with rape. The other 150 acres were not broken up, and appear to be greatly benefited by the lime, though the fog is still there. It wears a healthier tint than the pasture that was not limed. Several hundred acres have been drained with surface drains, which Mr Melrose accredits with having wrought an improvement in the health of the sheep. He is more in favour of tile drains where the ground has a good declivity, but good deep surface drains are observed to suit better where the land is level, and interspersed with "ochre" or red water.

Mr Samuel Davidson, manager for Lord Tweedmouth, Guisachan, says he has heard of some farmers in Inverness-shire who have top-dressed hill pasture with lime with very poor results. He considers draining and heather-burning the more effective agents in the improvement of hill pasture, without breaking it up, and recommends the following system, should partial breaking up be resorted to:—First, drain the land thoroughly with surface drains, then, if practicable, harrow the surface well with pointed iron harrows; top-dress with compost of lime, bone meal, and good soil, followed by a mixture of permanent grasses, which require to be carefully and properly rolled in.

Mr Gordon of Arabella, Ross-shire, has improved his hill pasture chiefly by surface draining, fencing, burning, liming, boning, and feeding with cake, &c. Very little land has been broken up.

Another Mid-Lothian farm, on which the improvement of hill pasture has been extensively carried out in recent years, is that of Hatton Mains, Wilkieston, occupied by Mr George R. Glendinning. The plan adopted by Mr Glendinning, like that of some of his neighboring farmers, is simple, and involves comparatively little expense. In the first place, where the land, which was principally old, rigged off with big furrows, ranging from 6 to 9 and 10 yards apart, was drained with a 4 feet deep drain in every alternate furrow, this making the drains from 12 to 18 yards apart. By this the land had been sufficiently dried, excepting about a yard or so at each side of the furrows that have no drains in them. To have drained every furrow, Mr Glendinning considers, would have ruined the land with expense, finding that it will not pay to drain such land—worth

originally from 4s. to 6s. an acre—if a charge of $6\frac{1}{2}$ per cent. has to be paid on the drainage outlay, 4 per cent. is the highest interest that should be charged on such land. About a year after draining he limed the ground with from 5 to 6 tons of limeshells per acre, keeping the lime out of the undrained furrows which were still too wet. Draining, including tiles, cost from £5 to £6 per imperial acre, besides the cartage of tiles performed by the tenant free of cost. The lime cost 10s. at the kiln, and with the expense of carting it 5 miles and applying it to the land, it involved a total outlay of about 15s. per ton, bringing the cost of liming up to from £3, 15s. to £4, 10s. per acre, according to the nature of the ground. Mossy ground required less liming than stronger land. Mr Glendinning recommends that no smaller tiles should be used than $2\frac{1}{2}$ -inch pipes, while in most cases 3-inch tiles should be used for ordinary drains, and probably from 5 to 6-inch tiles for main leaders. Where the land was naturally dry, and did not require draining, Mr Glendinning applied lime with equally good effect as to land that had been drained. He has improved from 200 to 300 acres of his farm, and calculated that the return for his outlay is not so much in the way of his being able to keep more stock, as in the consequent improvement in the quality and value of his sheep. He indulges the belief that the annual monetary returns for produce of his flock sold are now from 10 to 20 per cent. greater than they would have been with the land in its natural state. On the whole, the effects of the improvements carried out on Hatton Mains are simply marvellous, and are likely to prove of a permanent character.

Mr Stewart, Chapelpark, Kingussie, gives his opinion of top-dressing with lime as the only reliable means known of improving hill pasture. Liming is so expensive, however, that it does not pay a tenant to use it extensively, except with a very long lease. A top-dressing with bones might do as much good as lime for a short time, but lime is more lasting in its effects. Referring to moorland and heather, Mr Stewart considers no means of improvement more salutary than draining and heather-burning; the latter, he thinks, is greatly neglected, especially in the Highlands, causing a considerable loss to both shooting and grazing tenants.

ON THE INSECTS MOST INJURIOUS TO FOREST TREES,
THE DISEASES OCCASIONED BY THEM, AND THE BEST
MEANS OF PREVENTION.

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[Premium—Ten Sovereigns]

[The footnotes are by Mr J. Hardy, Oldcambus, Cockburnspath, who was
one of the Readers of the Paper.]

LARCH.

Chermes laricis, Hart. (Larch Bug).*Eggs* of a bluish purple colour, attached in masses, and covered with a cotton-like substance exuded by the female.*Larvæ* and *Pupæ* narrower than the perfect insect; marked transversely on the segments with large spots, which are the tubercular pores, through which the cotton-like secretion exudes. *Legs* most strongly developed in this stage: *head* broad, terminating in front of the two broad thoracic segments.*Imago*—*Female* about three-quarters of a line in length, *body* thickest at the middle; first and last broods wingless; *legs*, six in number, very short; they are not used after oviposition commences; *colour* dark green, sometimes purplish; densely covered with a white, cotton-like secretion. *Rostrum*, with which it pierces the bark, situated on the breast between the fore and middle legs. This instrument contains the long delicate retractile tongue, which it inserts into the wound, and thereby sucks the juices of the tree.*Male*.—*Body* much resembling that of the female in its second and third stages. In its last state it becomes very thick at the point where the wings are attached to the body, tapering to a blunt point behind, which is thickly coated with long, delicate bristles. *Wings* very large, of a slightly metallic lustre.

The "Larch Bug" is undoubtedly one of the most prevalent and injurious of the many noxious insects which infest the forest trees of this country. It would seem that the attention of arboriculturists was first drawn to it about one hundred years ago, since which time it has spread with alarming rapidity. Whether it is to be regarded as a species indigenous to this country, or whether it has been introduced along with some of our Conifera, is doubtful; but circumstances point to the latter theory as being the more probable. This is, however, a matter of little importance, as

compared with a practical acquaintance with the habits of the animal.

As the cold season approaches, the female, after copulation, retires from the more exposed parts of the branches, and locates herself under the recurved scales of the next season's buds. Here protected by the cotton-like secretion she spends the winter. The frosts which we usually experience do them no harm, as we have examined females after being exposed to 40 below freezing point, and found them quite uninjured. This hibernation lasts nearly six months, that is, till about the end of March or beginning of April, according to the state of the season. The female now deposits her eggs, without moving from her winter abode. Their number varies much, some females being surrounded by from three to four hundred, while others do not deposit more than fifty. In exposed situations the eggs are protected by the cotton-like covering secreted by the mother, but in most instances they are readily visible. They are of a bluish-green or purple; oval; one-eighth of a line in length, and one-sixteenth in breadth. After oviposition the female gradually shrivels, and ultimately dies in her winter home.

The *Chermes* does not seem to exhibit a preference for trees of any particular age. When the larch is much infested with the "bug," the constant loss of sap speedily produces pathological conditions. It is during dry summers that severe attacks are most ruinous to the larch; the sap is sucked out of the tree, and it makes little or no wood. Should wet autumns follow, they cause the sap to ascend rapidly, which immediately stagnates, causing a decay of the rootlets, which spreads to the older roots, and thence to the stem. The weakness produced by the *Chermes* is favourable to the attacks of various species of fungi which become attached to the stem, leaves, and bark. The most common species has the form of a stiff, wax-like filament, tipped with red or yellow. These insects, although not directly connected with the production of the forms of disease known as "ground rot" and "ulcers," nevertheless hasten their progress by interfering with the functions of the leaves and bark.

After spring frosts, which occur after the larch has put forth its leaves, the *Chermes* increases with alarming rapidity, owing perhaps to the sap having undergone transition to a state peculiarly adapted to the palate of the "bug." The pest is much less common on healthy trees during mild springs, accompanied by an abundance of rain. Under those conditions the insects never reach maturity. When the trees once succumb to the repeated attacks of this parasite, decay begins at the bottom, the lower branches dying gradually tier after tier, until only the topmost branches remain. In this condition the tree

will often stand for a long time, but its enemies do not leave it until it is killed outright.

It is only on infested trees of a moderate size that we may hope to be successful in practising remedial measures. In the early spring, care should be taken that trees known to have been infested the previous season, or those which are likely to be subjected to an attack, are thoroughly examined, and the presence of the adult female noted. They will generally be found at the bases of the leaf-buds where they have passed the winter months in the form of mere specks of a dull slate colour, very slightly covered with the remains of the cotton-like substance exuded in the autumn. No eggs are deposited in the autumn, so that all the broods of the following season depend entirely on the hibernating females, and it is not until the end of March or beginning of April that oviposition commences. Additional reasons for this being the best time for their destruction are to be found in the facts that the leaves and branches are undeveloped, and consequently there is less surface to be operated upon by the insecticide, and the trees being leafless, the *Chermes* is more accessible to its influence. The protective covering of the insects too, which would prevent the action of any liquid during the winter, is by this time worn off by the action of the weather. At this season a fair proportion of sunny weather may be expected, when operations may be commenced with a fair prospect of success. With regard to the various insecticides in use, those which act as poisons are generally of very little use; something is required that is hurtful or disagreeable to the external parts of the insects; this property will be found in paraffin, which, when diluted with 30 times its bulk of water, and applied in fine spray with a garden engine, we have found to answer the purpose admirably. In very dry weather, when the eggs are hatched and before the larvæ have covered themselves with the cotton-like secretion, we may try some of the liquid poisons, such as water containing Paris green in the proportion of one pound of the powder to about thirty gallons of water. This acts rather by preventing the larvæ from finding nutriment than by destroying the females, for when the liquid has dried on the trees the larvæ may be seen wandering about the young leaves without settling in any particular spot, and ultimately dying for want of food.

SCOTCH FIR, SILVER FIR, AND SPRUCE.

Sirex gigas, Linn. (Giant Sirex).

Larva from 2 to 2½ inches long; very soft and yielding to the touch; colour, dirty white; head yellowish or brown, with six very short legs of the same colour; tail furnished with a

blunt point, used, when the grub is boring in the solid wood, for packing its excrement firmly in the passage behind it.

Pupa very soft and white at first, but gradually assuming the colour and texture of the perfect insect as it develops; all parts of the perfect insect readily visible during this stage; *legs* and *antennæ* closely folded along the body from the head downwards; pupation is undergone while inside the wood.

Imago.—*Female*, length from head to end of ovipositor, $1\frac{1}{2}$ to 2 inches; *head* black, with two large yellow spots behind the eyes; *antennæ* bright yellow, $\frac{3}{4}$ inch in length, with twenty-four joints. *Body* three lines in diameter; black, covered with short fine hairs; primary wings fully 1 inch long, strongly veined, and of a yellowish metallic brown colour; secondary wings much smaller than the anterior pair; *abdomen* of the same thickness as the body; colour black, with the first two and the last three rings bright yellow, bordered with black or brown, terminated by a sharp instrument $\frac{1}{4}$ inch in length, resembling the blade of a double-edged dagger, and used for boring through the outer bark of the tree, preparatory to the long sheath of the ovipositor being used. Ovipositor protected by a sheath, provided with teeth, and fully $\frac{3}{4}$ inch in length. It springs from the under side of the abdomen directly in the centre, and is the strongest part of the body; it is so constructed as to bend either up or down. The junction is supported by five semicircular rings, which have no connection with the ordinary abdominal segments. The sheath is joined to the under side of the abdomen for nearly half its length, and is secured in this position by the prolongation and overlapping of the last abdominal segment underneath, which is produced, as far as the beginning of the antepenultimate segment; *shanks* black, *legs* and *feet* yellow.

Male much smaller than the female, with no abdominal appendages; *abdomen* flattened; last two segments black, the others yellow, shaded to reddish-brown at the margins; *antennæ* as long as the body; *hind legs* black, *feet* brown, with yellow rings at the extremities.

After copulation the female, by means of the short instrument on the last segment of the abdomen, rapidly pierces the bark of the tree to the depth of over an eighth of an inch. The long sheath cases of the ovipositor are then brought into requisition, and by a continual up, down, and gyratory motion of the insect, a hole, nearly three-quarters of an inch deep, is made. The sheath then splits into two along its entire length, and from the long black ovipositor a single egg is deposited at the bottom of this hole. The sheath is then closed, and the rasping action resumed, until enough powdered wood has been obtained to protect the egg and keep it in its place. The larva is hatched from the

egg within a fortnight, and immediately begins eating the powdered wood just mentioned, which serves as its first nourishment. When this is exhausted, the grub attacks the solid wood by means of its very strong toothed jaws. In about two months after hatching the larva reaches its full size, devouring the wood most voraciously.

How long it continues in the larval and pupal states has never been accurately ascertained, from the extreme difficulty attending the observations.

When in large numbers they render the wood almost useless. The females exhibit a preference for trees whose health has been impaired from some other cause,—even felled and partly dried timber not being exempt from their ravages.

The measures which can be applied in order to lessen the numbers of this pest are few. It may be abundant in a locality for years without being observed, owing to the close concealment of the larvæ, the presence of the enemy being only made known by the female during oviposition, or by the large holes in the bark, through which the perfect insects have made their escape. It must be understood that the larvæ never come to the outside of the trunk, but begin and end their career in the solid wood, choosing a situation near the surface in which to undergo pupation. The perfect insect eats its way out by means of its very powerful jaws, and while thus engaged it is easily caught, as it is at first incapable of flight. The female is also easily caught during oviposition.

The surface of the tree, which has been bored by the female, should be well saturated with paraffin; this will find its way to the eggs, which are easily destroyed by it.

It is utterly impossible to reach the larva while in the tree, as it packs the passage behind it with its excrement so firmly that this can only be pierced with difficulty by the point of a sharp knife. Where a number of trees are known to be infested with it, they should certainly be felled, and used for whatever purpose the condition of the wood will admit.

Although this insect has not been known to commit any very extensive ravages in Scotland, we have found it in various localities, and doubtless the secrecy with which its attacks are made is one reason why it is not more frequently heard of.*

SPRUCE FIR.

Chermes abietis, Linn. (Spruce Gall Aphis).

Eggs.—Yellowish-green, very minute, slightly kidney-shaped, attached together in masses resembling a miniature cluster of grapes.

* It is said to be on the increase in Berwickshire.—J. H.

Imago.—*Females* of the last brood provided only with rudimentary wings; *antennæ* very short; *body* half a line in length, almost spherical; *colour* oftenest a dark dirty green, sometimes slightly reddish; *legs* black; *rostrum* situated on the fore part of the breast.

Males about three-quarters of a line in length; *antennæ* longer than in the females, five jointed; *abdomen* ending abruptly, and densely covered with long, fine hairs. The male, after reaching its perfect state, takes no food, its only remaining mission being to fertilise the female. It is provided with wings.

The spruce fir is extremely liable to become disfigured by peculiar deformities, slightly resembling small cones, which are occasioned by the attack of this insect.

In the autumn, after pairing, the female fixes herself either at the base of a bud or among the bud scales. When the latter position is chosen she provides herself with very little covering, but when at the base of the bud she is completely hidden with a grey covering, resembling wool which is exuded through the transverse rows of pores situated on the back. In this position the winter is passed, and the insect assumes a shrunken and almost shapeless appearance, and much of the covering being worn off through the agencies of wind and rain, so that what was quite a conspicuous object in the autumn, is changed as spring advances to an unshapely speck.

About the end of April or beginning of May she begins to lay her eggs, at the same time gradually assuming her former shape, covering herself with masses of the flocculent material.

Each egg as it is deposited is fixed to the bud by an extremely delicate filament. The number deposited varies from a little over one hundred to as many as three hundred. They are all in one mass, so that as the successive layers are deposited the end of the abdomen is gradually raised. The limbs have now atrophied, and are apparently of no service to the insect, so that after oviposition is completed, which occupies from four to six weeks, she dies *in situ*.

The female, from the commencement of, and during her maternal activity, has been busily making incisions into the leaf-bud, by means of her very powerful rostrum, within which is placed a very long, delicate tongue, capable of being protruded or retracted at pleasure. This tongue is in the shape of a trident, with the centre prong very much extended, by the continual retraction of which the *Chermès* extracts the juices of the tree, and probably inserts a juice of her own secretion into the wound, whereby the natural swelling and growth of the bud is so modified as to form the

peculiar cone-like formation which ultimately serves as food to the larvæ.

The period required for the development of the eggs is from four to six weeks, and taking into consideration the time required by the female for oviposition, it will be seen that the eggs are not all hatched at one time. Were the case otherwise, the young and developing pseudo-cone would probably succumb to their attack, and thus they would be deprived of sustenance.

Almost immediately after the eggs have been hatched, the larvæ begin to move about, and in a day or two are to be found actually within the pseudo-cone. The cause of this is easily understood; the pseudo-cone is constructed on the same phyllo-taxoid principle as the true seed cone. The pseudo-cone, as has already been observed, is the result of the punctured and contracted stem, the leaves remaining short and much swollen at the bases. The leaves which form the outside of the pseudo-cone are not joined together at the bases, as has been supposed, but each assumes the form of a diamond mounted upon a stalk. The edges of the diamonds fit closely together, but between the stalks are spaces inhabited by the larvæ. The chinks between the diamonds will be found partly open during dry sunny weather, admitting of the ingress or egress of the larvæ in their young state. It will be observed, however, that as the larvæ increase in size, the width of the aperture, through which they gained admittance to the cell, is much too small to allow of their escape, and at this stage only serves them as a means of ventilation. In the course of a few weeks the pseudo-cone becomes hard and dry, the apertures widen, and the full-grown insects easily escape.

The females of this brood, immediately after being liberated from the pseudo-cone, begin to lay eggs, but the number is greatly below that deposited by the hibernating female.

Where the spruce fir is planted on land suitable to its requirements, we seldom have to note the occurrence of the *Chermes* to any great extent. This, indeed, holds good with most of the Conifera and their insect foes. We shall occasionally meet with a specimen in perfect health attacked with *Chermes*, *Hylurypus*, or *Hyllobius*, and the cause of this is easily understood when we consider that the females at a certain time of the year are provided with wings. While searching for a suitable place on which to hibernate, or deposit their eggs, they certainly possess the power of knowing their food trees; this is especially the case with the *Chermidæ*, but we are not so certain of their capability of discriminating between diseased and healthy specimens.

If, when spring comes, the young larvæ find themselves on

healthy, vigorous trees, breaking into growth, they become feeble and emaciated with the strong rank juices of the bark and leaves, and in this state a heavy shower of rain suffices to put an end to their existence.

When the *Chermes* attacks grown-up trees, we are powerless to effect a remedy, and if the damage be extensive the trees should be cut down, as they only supply the parasites with safe breeding places, from which younger trees will become infested. On moderately high trees we may be successful in arresting the mischief. The best time of the year for this purpose is undoubtedly the early spring, before the female commences to lay eggs, as the females are then comparatively few in number. They will be found slightly covered with the cotton-like secretion at the basis of the leaf-buds, ready, on the return of warm weather, to resume operations. A strong solution of soft soap in water, with the addition of a small quantity of tobacco-juice applied with an ordinary garden engine, appears to be the most effectual method of killing them. The pseudo-cones should also be picked off, but not for a few weeks after they first appear, because during that period the larvæ remain in the egg; but as soon as they are hatched, they spread over the surface of the pseudo-cone, and into the chambers which it contains. They should now be collected into an old pitcher, the sides of which are smeared with tar to prevent them from escaping. Care should be taken that the pseudo-cones are thoroughly burned as soon as gathered.

PINE.

Hylurgus piniperda, Linn. (Scotch Pine Bark Beetle).

Larva three lines in length; head and posterior extremity light brown in colour, the other parts dull white; thickest at the third, fourth, and fifth segments from the head.

Pupa yellowish-brown; *legs* folded on the body.

Imago two lines in length; black, sometimes (when young) brown in colour. *Elytra* deeply marked longitudinally, with short hairs springing from the interstices. *Thorax* narrowing from the body gradually to the head, which is thick, corneous, and covered with short bristles.

The female beetle hibernates most commonly beneath the loose bark on old trees, and sometimes within the borings in the twigs of the previous summer's growth. Those females which survive the winter do comparatively little injury to the shoots in spring, and die immediately after depositing their eggs. The brood which is most to be dreaded, on account of its destructive propensities, is that which has been hatched from eggs deposited the previous autumn, which are concealed under the bark of

dead wood, or under the bark of trees much advanced in decay. Previously to depositing these eggs, the female with her powerful jaws gnaws a hole through the bark, just large enough to admit her own body, and then scoops out a gallery about 2 inches long, which is sometimes straight, but most commonly crooked. During this operation it is only that part of the bark next to the wood which is removed, the excavated dust being carried to the outside, in order to leave an empty cavity for the eggs, which are attached to its sides by a gummy secretion. Each female lays from fifty to sixty eggs, which hatch in about two weeks or more, according to the season. The larvæ at once begin to eat out small tunnels for themselves at right angles to that made by the mother. At first these larval tunnels are exceedingly small in diameter, but they increase in width with the size of the inmates. If the winter be mild, they continue eating for the greater part of it, turning into pupæ about the beginning of March, and emerging as perfect insects simultaneously with the hibernating females about the beginning of May. It is at this period that the real work of destruction for the season begins. The old beetles forsake their hibernacula, and the young grubs eat their way out of the larval galleries,—eating most voraciously after their long fast. Attacking the growths of the previous summer, they begin at the base of the shoot by boring a small hole until they reach the centre, and then eating in an upward direction. The reason for thus beginning at the base and eating upwards would seem to be, that the supply of sap necessary to the formation of the summer's growth is thus curtailed, rendering the pith and the tender woody fibre mellow and suitable for their requirements. They continue boring up the centre of the shoot, destroying its most vital part, until they arrive at the base of the bud, where they emerge, ready to renew the same operation on another branchlet. Judging from the term of life of the perfect insect, and the time occupied in destroying a shoot, a single beetle will destroy from four to five shoots in the course of its existence.

The effects of a severe and protracted attack of *Hylurgus* on the pine are easily observed in the stunted and bushy appearance of the tree. The terminal shoots which are attacked seldom recover, and are never very healthy afterwards. From being partly deprived of their sap, they become slightly crisp and brittle, and are easily blown off by high winds. Near the point where the shoot is broken off or killed, the pent-up energy finds vent in the formation of a number of weak lateral buds, which, when developed, have an unhealthy, "drawn" appearance. If these should be on the lower part of the tree, the chances are against their living longer than a single season. The *Hylurgus* also influences the formation of the wood,—the annual layers

being very thin, and, furthermore, composed of little more than fibro-vascular bundles, thus rendering the wood extremely hard.

With regard to preventive or remedial measures, much may be done in the way of lessening their numbers in the year following that in which the measures are taken. It must be borne in mind, as of primary importance, that the *Hylurgus* invariably passes its first three stages below the bark of dead or fast decaying logs, root stumps and branches, also under the bark of standing trees in their last stages of decay. Attempts to eradicate this pest by pinching off infested shoots are practically worthless, the time required for this process being out of all proportion to the benefits derived. It will be much more profitable if attention be given to the breeding haunts. A most reprehensible practice, widely prevalent, is to leave débris of every description lying about among forest trees for an unnecessary length of time. As a means of lessening the attacks of this and allied species, it has been proposed to leave the thinnings of young plantations till far on in summer, the beetles and weevils will then choose the decaying thinnings in preference to the healthy growing specimens. Then, when the bait has been fully taken advantage of, to remove the infested branches to the outskirts of the wood or some open place, and burn them. This plan looks well on paper, but in practice the results will be found altogether disappointing. Many of the beetles are to be found clinging loosely to the leaves and branches, and on being disturbed lose their hold and fall to the ground, so that the branches are liable to be destroyed, minus the beetles.

The most efficacious method of prevention with which we are familiar is to be found in consigning to the flames all arboréal débris, as soon as it is rooted up or detached from the tree. An instance of the danger of leaving dead wood lying about the ground was seen seven years ago, when several hundreds of acres of larch and pine trees were felled on the estate of Hallyburton, Forfarshire, which were not previously infested to any great extent. The trees were sawn down, the stumps were left in the ground, and the whole surface thickly strewn with brushwood, with the result that as summer advanced these branches were literally alive with *Hylurgus* and *Hyllobius*.

Hyllobius abietis, Linn. (Pine Weevil).

Larva half an inch in length, with thirteen segments, including the head; the second, third, and fourth segments from the head are much thicker than the others: colour milky white; each segment crossed transversely with a row of brown hairs, carnosé and very soft, head bright brown, slightly covered with short bristles; legs, six in number, very short.

Pupa.—All the parts of the winged insect are easily discernible in this stage; legs folded on the breast; snout folded under the body; *colour*, at first, dull white, gradually assuming that of the perfect insect.

Imago, from half to three-quarters of an inch in length (not including the rostrum), and about a quarter of an inch in breadth; *colour*, brown or black on the upper part of the body.

Elytra ornamented with irregular patches of fine yellow hairs; each wing case has ten rows of black shining tubercles, arranged longitudinally on the upper surface, the intervening spaces being densely covered with punctures. The under surfaces of the wing cases are bright and smooth, and show the position of the tubercles very plainly. The under part of the body is of a lighter colour than the upper, owing to the presence of light yellow hairs. *Thorax* very hard and coriaceous, narrowing very abruptly towards the junction with the snout, thickly covered with tubercular dots, punctures, and very minute yellowish hairs. *Rostrum* slightly flattened, thick at the extremity, very hard, strong and corneous, about one and a half lines in length; *antennae* elbowed, terminating in a club-shaped appendage; outer divisions closely jointed. *Wings* folded transversely downwards, very large, when unfolded the primary pair extending for half an inch beyond the end of the abdominal. *Legs*—femora provided at the tips with a very strong hook or claw, by the aid of which the insect is enabled to cling to the small branches with great tenacity.

The female deposits her eggs on decayed wood and in the fissures of the bark of decaying trees, also on the bark of decaying root stumps. They are hatched very early in spring, and the larvæ feed between the bark and wood, undergoing pupation in their larval galleries. The pupæ are found in spaces which might readily be mistaken for cocoons, but which are in reality only spaces a little wider than the ordinary dimensions of the galleries, the pupæ being surrounded by the cast-off skins and larval excrement. During the pupal stage the legs are undeveloped, consequently the insect remains in this position until it assumes the form of the perfect insect, when by the aid of its powerful rostrum it eats its way out.

The weevils of the first hatched brood of the season begin to make their appearance generally about the first week in June, and may be seen during sunshine crawling lazily over the surfaces of the logs or old stumps, in which they passed their larval and pupal state, with their wing cases fully extended, and the wings unfolded over and beyond the abdomen, in order to perfect their development. On the second or third day after leaving their larval homes, they fly off in search of food. They never settle

permanently on well established robust trees; soon leaving them again, if they should happen to alight, for as soon as the bark is pierced by their rostra an exudation of the resinous sap begins, the rank nature of which seems to deter them from committing further injury. The weevils do not continue to enlarge the wound where the sap has been tapped, but begin afresh on a different part of the surface, and if the resinous juice continues to exude this puncture is also forsaken. They ultimately leave the tree, and seek anew for more suitable food. This they find on trees which have suffered from a visitation of the weevils in former seasons, or are sickly from some other causes, such as unsuitable soil or adverse climatic influences. The trees, however, most liable to the attacks of the *Hyllobius* are those which have recently been transplanted. The sap is used up in the formation of the annual wood and the tender spongioses, through being disturbed, or, as is too often the case, dried up in the operation of transplanting, are unable to supply the deficiency, consequently the bark becomes a little tough, and when it is punctured by the rostra of the weevils no exudation of resinous sap follows. This is the condition of the tree which suits the requirements of the *Hyllobius*.

As the weevil in its perfect state is quite a conspicuous object, hand-picking is certainly the most convenient and efficacious remedy where the attack is slight and the trees small. Where they prevail to any great extent on either young or old trees, the resources of the cultivator are taxed to the utmost, and the problem of how their destruction is to be accomplished too often remains unsolved. Our only chance of being able to cope with these most destructive marauders lies in strict attention to the removal of their breeding places; this is a most vital point, and too much stress cannot possibly be laid on it. Attention should also be given to the method of transplanting young trees. These should only be shifted when their roots are least likely to suffer in the process. If the operation be carried out otherwise in or near an infested locality, then they are extremely liable to be attacked.

Bostrichus typographus,* Fabr. (Typographer Bark Beetle).

Larva a quarter of an inch in length; body dull white, with yellowish-red markings; head light brown; legs, six in number, very short.

Pupa very soft at first; creamy white, gradually assuming the colour and form of the beetle.

Imago nearly a quarter of an inch long, and half as broad;

* A failure as to identification of the species. This insect is in none of the entomological lists for Scotland.—J. H.

densely covered with fine hairs, becoming almost black as it grows old; *head* dark brown; *thorax* lighter coloured than the *clytra*, which are dotted with minute punctures; mandibles very strong and sharply toothed.

The insect passes the winter most commonly in the larval and pupal states, and frequently hibernates in the winged state. It rarely happens that eggs are deposited in autumn. There are only two broods in a year, and, as a rule, the last is hatched too late in the summer to allow of its perfect development, so that pairing does not take place until the following spring. The perfect beetles issue from their breeding places, very irregularly, from the end of April or beginning of May, till the end of June. It is chiefly in the larval state that this insect attacks fir trees. It prefers sickly trees to those in robust health, but if the former are not plentiful the strong rank juices of healthy trees do not deter it from carrying on its operations. The eggs are laid under the bark of the trunks of trees in cavities prepared for their reception by the male and female. After copulation the male bores a hole through the bark, at an angle of forty-five degrees, so as not to allow of the percolation of rain. After the wood has been reached the burrow takes an upward direction. The male dies after commencing the tunnel, and the work of completing it is left to the female. The tunnel is generally 3 inches long, and the eggs are fixed by a secretion in small lateral cavities at right angles to the large tunnel. In a few days the eggs are hatched, and then the principal work of destruction begins. The larvæ continue lengthening and widening the lateral cavities, which were provided for the eggs, so that the tortuous windings of their workings, at the termination of their larval state, suggest a resemblance to hieroglyphics, whence the specific name. The larvæ turn to pupæ within their cavities, eating out a space somewhat wider than the rest, within which they cast their skins.

The beetles eat their way out of these larval cavities about the beginning of September, but sometimes much earlier, and immediately commence to prepare for next season's progeny.

The means for destroying this insect are much the same as in the case of *Hylurgus*,—the careful removal of all dead and decaying timber. Where the larvæ are present in great numbers in the bark of living trees, these had better be cut down and removed; but should it be deemed desirable to allow them to stand, the most efficacious remedy is to moisten the infested bark with diluted paraffin, using one gallon of oil to about thirty of water. This should only be applied at night in dry weather.

Tortrix Buoliana, Fabr. (Pine-Shoot Tortrix).

Larva about eight lines in length and one line thick, of a dark green colour, marked longitudinally with black.

Pupa rich brown in colour.

Imago nearly an inch broad in the expanse of the wings; body brown, mixed with faint yellow and red markings; primary wings reddish-yellow, where they join the body, shading into a deeper colour at the extremities; marked transversely with faint white lines, fringed at the outer margins with long greyish scales; secondary wings of a drab colour, with two faint lines bordering the outer margins and the sides next the body; these parts are also fringed with long scales.

The moth appears about the latter end of July, and the eggs are deposited amongst the buds and the outer leaves of the same summer's growth, and are hatched about the end of August. The young larvæ immediately attack the newly formed buds, at the same time spinning a kind of web, fixing it to the bud all round themselves, so as to form a miniature dwelling. This is plastered inside with the resinous sap exuded by the bud. In this secure position the larva passes the winter, and does not again show itself until the young shoots are expanding. On emerging, it spins a fresh covering for itself at the bottom of the young shoot, leaving entrance and exit holes at the top and bottom respectively. Within this protection it rests during the greater part of the day, especially during sunshine, and also in wet weather. It feeds only at night on the young and tender wood and leaves, doing great and irreparable injury to the shoots by giving them a stunted and crippled appearance.

The destruction of this troublesome pest often involves a serious amount of labour. Where the larvæ exist on the young trees in great numbers, it will be found best to water the trees with a solution of Paris green, using 1 lb. of the powder to 40 gallons of water. Where the trees are only slightly infested, the best way is to examine them in the early mornings when wet with dew, which clings in minute globules to the threads of the web, giving it a whitish appearance. The caterpillars should then be crushed, care being taken that they do not escape by letting themselves down on their silken threads.*

Lophyrus pini, Linn. (Pine Sawfly).

Larva over an inch in length, and slightly over one line thick; with six true legs—two on each side of the first three segments; fourteen false ones, situated on the segments, from the fifth to

* There are other seven species of *Retinia* in Britain with similar habits.—J. II.

the eleventh; and also two sucker legs on the last segment,—in all twenty-two. There are twelve black spots on each side of the body, which is commonly of a yellowish-green colour.

Pupa thick and fleshy, with the antennæ and feet folded on the body.

Imago half an inch in length, and nearly three-quarters of an inch in expanse of the wings; *head* and *thorax* black; *abdomen* of a brighter colour, marked with yellow; *antennæ* feathered on the inside, very closely jointed.

The fly emerges from the pupal stage about the beginning of May, but the members of the first brood do not make their appearance all at one time. The female deposits her eggs in the leaves of the pine in long slits, which become partly healed up through the exudation of the resinous sap. The larvæ eat their way out, and attack the young wood and leaves, doing very considerable injury to the trees. They continue in their larval state from six to eight weeks, and the number of leaves and the quantity of young wood which a single larva will destroy is also very considerable. Thanks to the great number of natural enemies which feed upon them, a comparatively small number only reach the imago state.

The larvæ pupate upon the ground among the grass and withered leaves. They are gregarious in their habits in the last three stages, and can thus be easily destroyed in large numbers. About the end of August, when pupation takes place, the branches should be well shaken in order to bring to the ground any remaining caterpillars on the tree; immediately this is done the leaves, grass, &c., lying about the foot of the trees should be removed and burned. Another method which has given very satisfactory results is to syringe the infested parts with soft soap dissolved in water, using 2 lbs. of soap to 20 gallons of water, and adding a small quantity of tobacco juice. This fluid should be applied in the mornings of sunny days, as it then takes more effect than if the operation be carried out in dull weather.

Chermes pini, Linn. (Pine Chermes).

The pine *Chermes* is very closely allied to the species which infests the larch, but many parts of its history are very different. The larch bug hibernates at the bases of the leaf buds, whereas the pine *Chermes* passes the winter in the egg, chiefly on the under parts of the branches, but also in the sheltered crevices of the bark on the trunks. The little white patches of the adhesive cotton-like substance, which covers the eggs, are placed very thickly along the entire length of the under side of the branches.

The *Chermes* in its attack upon the pine fastens itself by its

rostrum to the leaves and tender shoots of the topmost branches, ultimately spreading to the lower ones. The effects of a continued and severe attack are most disastrous to the pine; it loses the leading shoot first, then gradually tier after tier until it is killed outright.

There are three broods in a year—the females of the first brood are wingless, the first and second broods produce their young alive, and the females of the third brood commence egg-laying in September.

The measures recommended for the destruction of the larch bug are equally applicable to the pine *Ohermes*, but the time chosen should be the first two weeks in September, or when the eggs are hatched in spring. A method which we have found most serviceable in thinning their numbers on young or moderate-sized trees, is to go over them with a piece of coarse flannel cloth held firmly in the right hand, while with the left the branches are brought into a convenient position, thus rubbing off as many of the eggs as possible. This operation succeeds best in frosty weather.

ELM, OAK, AND BEECH. •

Cossus ligniperda, Fabr. (Goat Moth).

Larva, when full grown, from 3 to 4 inches in length, and nearly three-quarters of an inch in thickness. The dorsal area is of a rich dark cherry colour; ventral area and claspers reddish-yellow. The respiratory openings are of the same colour as the back. Head black, with a large curiously-shaped patch of the same colour on the first segment behind the head; feet dark brown. The whole caterpillar is sparsely covered with pale yellow-coloured bristly hairs. When attacked or disturbed the caterpillar makes a rapid movement of its head in the direction of the intruder, and ejects a small quantity of dark coloured fluid, which emits a most intolerable stench, said to resemble the smell of a goat, from which circumstance the moth derives its name.

Pupa enclosed in an ovoid cocoon, very strongly constructed of small pieces of wood, which are closely bound together with the fine silken threads spun by the caterpillar. The body of the pupa is brown or black; *abdomen* of a lighter colour, covered transversely with rows of strong spines pointing towards the tail.

Imago from 3 to 4 inches in the expanse of the wings. Anterior wings much larger than the secondary pair; *colour* rich brownish-grey, crossed transversely with very irregular black markings; secondary wings of a greyish colour, reticulated with dark grey; *abdomen* of a brown colour, alternating with a lighter shade on the tops of the segments; *antennæ* crescent-

shaped, feathered on the inside; wings folded on the body during the day when it rests on the bark of trees. Owing to the great resemblance which it bears to the bark of several trees, it is somewhat difficult to observe. The moth chooses the trees which are intended to serve the larvæ as food; on these, in the crevices and sheltered places of the bark, she fixes her eggs, which are hatched in the course of three weeks. The larvæ at first are mere specks in size, but grow rapidly, and in a short time eat their way into the bark, in which they feed for the first few weeks of their lives. As they become strong they attack the wood, eventually eating their way into the heart of the tree, making a tunnel of their own diameter. They continue in the larval state from three to four years. It is only a comparatively small portion of the wood bitten off in the course of their excavations which is used as food, the hard parts of the annual wood layers being invariably rejected, while the soft and juicy material within the layers is preferred.

During the night-time the moths become active, darting about with great rapidity, seeking their partners and sipping the nectar of flowers. A most effective method of catching them is to procure one pound of treacle, to this add a wine-glassful of rum and a little brown sugar, agitate the whole until thoroughly incorporated. This mixture should be smeared on pieces of board about a foot square, taking care to leave some dry places for the moths to alight upon; a small trough is fixed to the bottom and filled with pure treacle, so that it may be exactly underneath the mixture. The moths sip the preparation greedily, and becoming quickly intoxicated they lose their hold, and fall into the trough prepared for their reception. The treacle sticks to their wings, detaining them until the trough can be examined in the morning, when the captured moths should be destroyed and the boards removed and placed under cover to prevent them from becoming dried up. This method needs only to be practised among the trees where the caterpillar is known to exist; it may be most successfully practised during calm, dry warm nights in the months of June and July. The moth may also be taken while undergoing transformation from the pupa to the imago, being then in a most helpless state. The cocoon is forced up to the aperture in the bark, and the pupa, by the aid of the spines on its back, comes half-way out of the cocoon, so as to protrude more than half an inch outside the bark of the tree. The caterpillars, when near the close of their larval life, may occasionally be seen outside the bark of the tree wandering aimlessly about; but if any of the larger insectivorous birds are near, the conspicuous appearance of the caterpillar renders them almost certain to become their prey.

It has been recommended, as a means of lessening the numbers of the larvæ, to thrust a hooked wire into their tunnels, so as to drag them out. This may be successfully done with the pupæ, but the tunnels of the larvæ are, as a rule, very deep and tortuous and quite inaccessible,—indeed, even fumigating with strong tobacco smoke does them no apparent injury. The most effective method of dealing with a badly infested tree would be to cut it down, and use the wood for whatever purpose it may be found serviceable.

OAK.

Melolontha vulgaris, Fabr. (May Bug).

Larva.—Length when full grown about one and a half inches, and half an inch in diameter; dull white in colour; head and feet ochreous. The colour of the abdomen is influenced by its contents, which shine through the walls. Before the close of their larval career, that is, at the end of the third summer from hatching, they descend into the ground to a depth of from 3 to 4 feet, and in the following spring undergo pupation. In the same position, for at this period their organs of locomotion are immature, they gradually develop into the perfect beetle, and emerge from the ground in May of the following year.

Imago, about fourteen lines in length and six in breadth, the dominating colour being brown. The head is of a darker colour than the thorax, which is a bright metallic brown, slightly covered and densely fringed with greyish down.

Elytra covered with coarse decumbent hair, and traversed longitudinally on each division by four raised lines, and also raised margins; densely punctured; the colour being yellowish metallic brown. Under part of the body densely covered with fine silken hairs; *abdomen* terminating in a peak pointing downwards; black, fringed at the margins of the abdominal rings with white, and having five triangular patches of pure white on each side. The head is furnished with horns placed directly above the eyes, and terminated by a club, which, when opened, closely resembles a fan, having six leaves in the female and seven in the male. The fore legs of the female are admirably adapted for digging operations, the central part being toothed and horny. This part she uses in her extensive soil-boring operations, the lower divisions of the legs being meanwhile folded up between the shanks.

The larvæ are hatched from eggs, which are deposited about two weeks previously in the soil a few inches from the surface, each female laying about twenty. They continue in the larval state for three years, and it is during this period that they are

most destructive to the roots of low-growing vegetation, whilst it is in the perfect state that they are most troublesome to forest trees. The insect makes its appearance from the ground during the month of May, and lives for about four weeks, eating voraciously the young and tender leaves, chiefly of the oak and elm. Where these parasites exist in any great numbers the damage they occasion is very considerable. In some cases they entirely strip the tree of its leaves, and cause it to make a second growth. As regards preventive measures, little headway can be made against the attacks of these larvæ, seeing that they invariably feed below ground. In districts where they are found to prevail to any great extent, however, much good may be done by encouraging those birds which feed upon them, principally the crow, starling, thrush, and fieldfare. On freshly broken pasture land these birds will be seen devouring root-eating larvæ of every description most greedily.

The *Melolontha* is more easily dealt with in the imago state. In the beginning of May the perfect insects may be seen emerging from the ground in great numbers during the mornings; they are then quite unable to fly, and creep lazily about for a day or so to perfect their wings. As night approaches they fly off in search of their food trees—the oak and elm, the leaves of which they devour most voraciously. During the day-time they rest, clinging to the under sides of the leaves and small branches.

Trees of a moderate size can be most expeditiously cleared of the beetles by using birch brooms with long handles, which should be gently beaten against the leaves and small branches, thus causing the insects to fall to the ground. The branches may also be shaken during strong sunshine, for then the beetles are most sluggish, and easily lose their hold. While this operation is proceeding, one or more persons should be stationed below the branches of the tree with a broad, flat shovel ready to crush the insects as they fall.

Lithocolletis, sp. incog.

Larva, when full grown, three lines in length; head black,—the first, second, and third segments light green, shading into dirty yellow towards the tail, and having a black marking down the centre of the dorsal area; legs, six in number, attached to the first, second, and third segments, and two short sucker legs attached to the last segment. The ventral area is spotted with black.

Imago from two to two and a half lines in length; antennæ longer than the wings; the primary pair of wings are of a faded yellow, waved transversely with beautiful golden tints, and spotted with dark brown at the base; secondary wings drab coloured, and fringed at the margins with very long scales.

This insect belongs to the Micro-lepidoptera. It is exceedingly minute in all its stages, and, along with the allied species, has not hitherto attracted so much attention from observers of forest entomology as might have been expected, from the depredations which they commit on the leaves of the oak and elm.

It survives the winter in the pupal state within the withered leaves of the previous summer's growth, and may also pass the winter in the larval state within the leaves of the various evergreen oaks,* changing to pupæ about the end of April. The moth appears from the withered leaves of the deciduous as well as from those of the evergreen oaks simultaneously about the end of May. It exists in the perfect state for a very few days. Immediately after pairing oviposition begins. The female deposits in all about thirty eggs, which are placed within the lower cuticle of the leaf, under the lower or spongy parenchyma, the moth being provided with an ovipositor for this purpose. The larvæ on being hatched find themselves immediately surrounded with food, and they soon begin to show their presence within the leaf by eating small channels in the spongy parenchyma. As they increase in size, the width of the channel increases proportionately until the middle of July, by which time they have eaten out a large space, and the separated cuticle has become quite dry and brown, presenting from the outside the appearance of a large blister. The larva pupates inside the leaf, and a short time afterwards the empty pupa cases, from which the moths have made their escape, may be seen hanging half out from the raised cuticle.

The only remedial measure with which we are much acquainted consists in thinning their numbers by carefully collecting the withered leaves as they fall from the trees and burning them.

BEECH.

Chermes fagi, n. sp.†

Eggs closely covered with a woolly substance, which is secreted by the female. Being red in colour, they are easily seen within the white woolly substance. They are deposited in autumn in the rough crevices of the trunks and branches of beech trees. They were hatched this year by the first week in May, but the subsequent ungenial weather killed myriads of the young larvæ.

Female.—Body flattened, thickish at the middle, tapering to a point at each extremity. The margin of the body is of a reddish-brown, with legs, head, and antennæ of the same colour, and a large deep brown patch on the back.

* The evergreen oak species is *Lithocolletus Messanicella*. It also occurs on other oaks. The author appears to be writing about more than one species. Had the moth been preserved, it would have witnessed for itself, yet cannot be determined without.—J. H.

† Kalténbach, *Pflanzenfunde*, p. 631.

This pest, we have reason to fear, has made its appearance on the beech during the last few years. So far as we are aware, it was first observed in Mid-Lothian six years ago.* In the following summer it was noticed in various parts of the country, and each year it would seem to be becoming more numerous. Its power of multiplication is enormous, each female in autumn laying from four to five hundred eggs. These in spring produce whitish larvæ, which complete their transformations, and appear as perfect insects in a few days. They very easily escape notice, as they somewhat resemble the markings on the bark. On close examination on wet or windy days, the fissures in the bark may be found to be quite filled with them.

In a few days after attaining their perfect state they ascend the tree to the extremities of the branches, and settle on the young leaves, sucking the juice out of them with their rostra. During the summer months they produce their young alive, and there are about twenty generations in a single year. The females of the last brood commence oviposition about the second week in September.

The most effective way in which to deal with this minute pest is to thoroughly cleanse the bark of the eggs in the winter months, and, if possible, during the prevalence of frost, using new and hard fibre brooms for the purpose. The eggs for the most part are deposited on the lower half of the tree, consequently they are easily accessible. Nothing can be done in the summer months, for the insects, which are most severe on old trees, are then far from our reach.

ASH.

Chionaspis fraxini, Chavannes (Ash Bark Scale).

The various species of the *Coccus* family are rather widely distributed, few trees or shrubs being entirely exempt from them. Sometimes, especially during the nursery stages, they do considerable injury. Their method of attack is very complicated, and we have still much to learn concerning their life history. In their young state the females are endowed with the means of

* It was first detected in Dalkeith Park in the winter of 1848, and shortly before that in the London parks. There is a notice of it in the *North British Agriculturist* for 1849. It is still to be found at Dalkeith, and also near Mavisbank, at Aylon, Berwickshire, and in the Ravensworth Woods, county Durham.—J. H.

Still later (in 1886) a single patch has appeared in a beech hedge in the grounds at Marton House, Roxburghshire. Many of the old beech trees on the side of the public road between Polton Bank, by the village of Roslin, are infested with it. There may be doubt as to the species described by the writer as *Chermes fagi*. What I and others have seen on beech trunks is *Pseudococcus fagi*, Baerenssp. = *Coccus fagi*, Walker; colour yellow; length $\frac{1}{2}$ line; not a *Chermes* at all. The statements about its producing young alive in summer, twenty generations in a year, and the final resource to the foliage, are not accordant with any other writer's observations. Has not the author mixed it up with *Pseudaphis fagi*, so pernicious to the foliage of beech trees and hedges? I find the *Coccus* in summer on the beech trunks.—J. H.

locomotion, which when in the perfect state they entirely lose; the body becomes much swollen, and the legs soon from their very delicate appearance quite unable to support the weight of the body; the female then attaches herself to the bark and leaves, and pushes her sucker into the bark, and in a short time oviposition commences. The eggs are of different colours in the various species—in the one above named they are of a blood-red colour; perfect female somewhat kidney-shaped, of the same colour as the ash bark.

In the autumn, as oviposition progresses, the body of the female becomes very small until nothing is left of her save the skin or shell which has been glued to the bark by a liquid of her own secretion. This shell serves as a protection for the eggs during winter. The larvæ are hatched from the eggs while under the dead body of the mother, and as the weather and other circumstances become favourable, their increasing size forces up the now fast-decaying protection, thus allowing them to make their escape. It is while in this position, *i.e.*, while the scale is glued to the bark, that most injury is done to the young tree, the liquid material, which is secreted for this purpose, clogging up the pores of the bark.

The measures recommended for their extermination are many and varied, but from a want of knowledge as to the proper time for application, they are very often of little service. There are three different times in the year when the *Coccus* may be attacked with fair prospect of success,—first, about the time when the young larvæ emerge from under the dead body of the mother, a sharp look-out ought to be kept, for at this stage they possess the means of locomotion, and, as a rule, they remain but a short time near their birthplace. Immediately after they emerge from their hiding places, they are easily destroyed with diluted tobacco juice, or paraffin applied in a spray through a syringe or hand engine; a warm and dry day should be chosen for this operation.

During the summer months little or no headway can be made against them, for they are then to be found in every stage of development scattered over the leaves and branches. When the mother *Coccus* fixes herself on the under side of tender leaves, any effort to dislodge her will be attended with no satisfactory results, as any insecticide strong enough to kill the scale will also do irreparable injury to the leaves. It is well, therefore, to defer remedial measures until the leaves fall from the trees, carrying myriads of the insects with them; these should be immediately collected and burned.

Our third opportunity is in frosty weather when the trees are leafless. They may then be rubbed clear of the pest with a hard brush previously soaked in a solution of soft soap, water, and

tobacco juice. This is a most efficacious method, as the trees are then most easily handled, the scale being hard, dry, and easily bruised; and the eggs, when coated with the solution, immediately lose their vitality.

The ash bark scale is chiefly found on specimens whose health has been steadily deteriorating through various causes—such as growing in unsuitable soil, being planted too closely together, or growing in plantations among other taller trees, where there is an insufficient supply of light and air. In nurseries and young plantations we have found the ash to be most seriously attacked after having undergone transplantation, especially in spring.* The ash being naturally late in starting into active growth, both in roots and branches, is further retarded by transplantation; and by the force of the sun's rays beating on the bark, much of the reserve sap becomes evaporated. When the buds do eventually break, their growth is comparatively weak, and these are just the conditions under which the scale thrives. We seldom see it attack strong healthy growths, and when this happens the robust nature of the tree wards them off, preventing them from obtaining any footing. The effects of an attack of the *Chionaspis* on the ash are plainly to be seen in the stunted growths of the shoots, the small irregular annual wood layers, and disfigured leaves. The bark has also a blotched and blistered appearance, the blisters indicating the places where the females have attached themselves. If preventive measures be not speedily applied whenever an attack is noticed, the scales soon obtain the mastery over the tree, and rapidly kill it. The trees most liable to become victims are those between the ages of six and eighteen years, after that time the bark becomes rough, and does not suit their requirements; they are consequently seldom found on trees above that age. When the trees outlive a severe attack, the outward effects of it are almost unnoticeable in a few years, except for the blotches or blisters on the bark, and the short stunted growth of the branches where they have been attacked. But the fact of the tree having undergone a check is indelibly written within in the very small and irregular annual wood layers.

BIRCH.

Phytoptus betuli (Birch-bud Mite).

This Acarid is not more than one-thousandth part of an inch in length, and one-fifth of its length in breadth, consequently it can only be seen by the aid of a powerful magnifier. At first sight it presents the appearance of a minute maggot, but on closer inspection it is found to possess five† pairs of legs and

* The evil originates in the nurseries, whence infected nurslings are transplanted.—J. H.

† Two pairs only.—J. H.

two pairs of feelers placed at the sides of the head; the body is much marked transversely, and narrowest at the posterior extremity. Notwithstanding their minute proportions, these mites contrive, from their multiplicity, to work considerable injury to the birch by attacking the buds, and ultimately causing those peculiar growths, which look not unlike crows' nests. They work in colonies, and introduce themselves into the unopened buds at the extremities of the branches, which they soon rob of their vitality.

As a succession of unopened buds are required all through the summer for their food, these are provided in the following manner:—

The terminal or first attacked bud being destroyed, the pent-up vigour of the branchlet finds vent in lateral buds, some of which in turn are attacked and destroyed. Others grow and attain lengths varying from 6 inches to 3 feet, and these in their turn are attacked, and again send out lateral shoots. This system is kept up all through the summer, until the trees lose their leaves. The descendants of the original colony keep to the same witch knots for years, until they no longer provide them with the means of sustenance.

The mites are but poorly provided with the means of locomotion. The female lays a very large number of eggs, which may be seen in dense clusters, on and between the bud scales, at almost any season of the year. There can be no doubt of their being spread from one locality to another by birds, insects, &c. They do not increase rapidly in any locality, but where circumstances are favourable to their development, the destruction of the tree they choose is very slow, but certain.

Trees that have suffered from their attacks will be found situated in unhealthy positions, such as cold, retentive soils,* amongst taller growing trees, where there is a lack of light and air. These trees will be found sometimes to have little else remaining than the thicker portion of the branches, with here and there portions of the less easily destroyed witch knots, imparting to the tree a weird and uncanny appearance. This pest is pretty equally distributed over the country.

The most effective method of dealing with the mite is to cut off the witch knots, with as much of the adjoining branch as can be spared, without disfiguring the tree, and immediately the leaves fall in autumn, collect, and burn them.

HOLLY.

Phytomyza ilicis Curtis, 1846 (= *P. aquifolii*, Gourreau, 1851).

The life history of this minute depredator presents a most

* They occur also on trees in light, stony soil, and among rocks in shady fissure: it is questionable if the soil has any effect on their occurrence.—J. H.

interesting study. The method of attack is similar to that of many of the mining, *Lepidoptera*. In the month of September the females after pairing select those trees which are sheltered from east winds to serve the brood of the following spring as food. The female is provided with an ovipositor, by the aid of which she pierces the upper cuticle of the leaf, and deposits a single egg in the parenchyma, so that after the lapse of a few days, when the maggot is hatched, it finds itself in the midst of its food.

The female continues piercing and laying eggs on separate leaves until about forty have been deposited. The presence of the maggots within the leaf is first made known by the appearance of a small brownish mark on the upper cuticle, which is caused by the grub eating out the upper or palisade parenchyma of the leaf. The channel which it eats is sometimes straight, but most commonly tortuous. As the maggot increases in size, the channel increases proportionately until at the close of its larval career a portion of the cuticle about the size of a threepenny piece has been raised. The injury caused to the leaves after an attack is particularly offensive to the eye from the colour they assume, presenting the appearance of being scorched by the sun. The larva continue eating within the leaf through the winter months, and if the season be mild, they undergo pupation about the beginning of March. Previously to this the larva eats a semicircular opening in the under side of the leaf so as to form a lid,* and then places itself in such a position that the fore-part of its body as a pupa is immediately underneath this lid, so that when the imago comes forth from the pupa case it escapes with ease.

Sometimes, and especially in sheltered situations, the *Phytomyza* predominates to such an extent on the *Ilex* that each leaf is disfigured with as many as three or four blisters. It is extremely common in the south of Scotland generally, the extent of its ravages not varying perceptibly from year to year. Where the "holly" is planted with an exposure to the sea breeze, it may be said to be exempt from the attacks of this insect. Along the west and east coasts, and especially the latter, it is almost unknown.† The causes rendering it liable to attack seem to be want of air and light. The injury caused to the leaves by the larvae when they are abundant is deleterious to the health of the tree.

The most efficacious methods of dealing with the pest are, either to cut the trees down and burn them when badly infested, or to pick off the blistered leaves and burn them.

* I have often extracted these and puparia of other mining *Diptera*, and never observed the lid.—J. H.

† It is quite common in the south-east coast woods.—J. H.

ADVANTAGES TO BE DERIVED FROM A KNOWLEDGE OF
INJURIOUS INSECTS.

The chief object aimed at by writers on injurious insects should be the dissemination of sound and accurate knowledge respecting the life history of the several insect pests, to enable gardeners, foresters, and farmers to discriminate between their friends and foes. The friendly insects, those which feed on the injurious ones, are certainly very numerous, and it is to be feared that often in measures of extermination the innocent are sacrificed with the guilty. A knowledge of the haunts, food, and other points in the domestic economy of these parasites will dictate the most effectual measures for their destruction. Much investigation is still required respecting many important matters in connection with forest entomology. It is impossible that this can be accomplished by even great exertions on the part of a few workers, but by the combined observations of many arboriculturists, correct conclusions regarding the economy of many of our little known insect tormentors will much more speedily be reached.

THE FEEDING AND MANAGEMENT OF DAIRY COWS.

By PRIMROSE M'CONNELL, F.H.A.S., Ongar Park Hall, Ongar, Essex.

OF recent years dairy farming has come greatly to the front, and everything pertaining to a cow is of much importance to a large section of the farming community. Dairymen are popularly supposed by their arable brethren to be, in many cases, making their fortunes; but, as the amount of these fortunes depends very much on the cost of feeding and economical management of the stock, the lessening of the outlay is always to be aimed at quite as much as the increasing of the income, and very often offers greater opportunities for improvement; and so a few notes on the subject may not be without interest.

These matters have been so often discussed at dairy conferences and elsewhere, however, and there has been so much written about them, that it will be well-nigh impossible to present anything fresh; so, therefore, it is only proposed in this paper to give the principal points connected with the working and feeding of a dairy of cows, with some few comments thereon.

It will suit our purpose to divide dairy stock into two kinds—(a) those kept for the supply of milk during summer only, which milk is afterwards manufactured into cheese or butter; (b) and those kept for an equal supply all the year

round, especially for town consumption. It is manifest that, at some periods of the year at least, the style of feeding and management must be different for the two kinds.

Summer Milking Cows.—As the oldest and most natural way is to have cows yielding milk during summer only, we will first consider it. Under ordinary circumstances, the animals are timed to drop their calves in the early spring—the end of February, March, and beginning of April. It is intended that they should all calve as nearly as possible at the same period, so that there may be a sufficient quantity of milk to work with, but as it is not possible to have all served with the bull at the same time, and as some may not hold to the first service, they drop in irregularly during a couple of months or more. Under such circumstances, it is usual to put them dry in November after being in milk for about eight to nine months. A cow, of course, will yield milk for nine or ten months, or even longer, but where all are gradually going dry at one time, the quantity of milk eventually becomes too little to be worth the trouble of manipulating, and therefore they are not milked for much over the eight months. Some farmers, however, find it suitable to commence sending milk into town on the approach of winter, and in such cases the animals are encouraged to yield as long as possible. The lengthy period of three to four months' rest allows them to recuperate, and they milk all the better for it during the succeeding season. In fact, it is a matter of common experience that, if an animal is drained too long, both her own constitution and that of her growing fœtus are injured: the calf will be pining and weak, and the mother will not milk so well the next season. An examination of the spongy mass of the udder shows that microscopically it is made up of a very large number of little hollow bags or sacs (*alveoli*), each lined with a coating of cells. It is the function of these cells to manufacture the different ingredients of the milk (butter-fat, cheesy matter, &c.) out of the blood, and when the animal is not in milk, the open central space of each *alveolus* is gradually filled up with loose cells similar to those which line the walls of the cavity: this is one of the recuperative acts which are brought about when a cow is not in work, and which takes time to bring about. When lactation again commences at calving, these loose cells are first of all cleared out, and give the peculiar character to the first milk yielded, and which we call "colostrum" or "boistings." As this has a purgative effect, it should be always given to a newly-born calf, as nature intended, so that the internal machinery of the youngster may be put right at the start. A cow should thus be allowed at least six weeks to two months of a rest. Usually the bull is not put to them till the end of June or beginning of

July, so that they may come round at the proper time again next spring, and one will serve some fifty cows during the time allowed, though we have seen sixty allotted.

Summer Shelter.—The principal food of a cow in summer is of course grass—if good grass so much the better—but there are several matters connected with the general management which will first be noticed.

The troubles which afflict our cattle most in summer are heat, flies, and sometimes a scarcity of water. It may sound rather paradoxical to say that cows require shelter quite as much in summer as in winter,—but it is a fact nevertheless,—and any one who will endeavour to supply them with shade will be well repaid for his trouble. Clumps of trees, tall hedges, and even sheds, are all good investments in this line; and though neatly trimmed fences look well on a farm, yet they would be better liked by the cows if left a trifle “tousy.” The torment which cows suffer from “clegs” (*Tabanus bovinus*), warble-flies, and others, is so great during bright sunshine that something ought always to be done to relieve them. We have known a drop of twenty pounds of curd—equivalent to as many gallons of milk—in a dairy of 60 cows in one day from this cause alone. In some parts of the country, and especially in the south, it is the custom to put them indoors for two or three hours during the hottest time of the day, giving them some green forage to eat.

Water.—In addition to shade, it is also absolutely necessary that they should have plenty of good water. When we remember that milk contains about 87½ per cent. of water, and that a cow will use up, for milk-making purposes alone, from three to four gallons daily in the flush of yielding, over and above that which is required in the vital processes of digestion, perspiration, &c., we can form some idea of the quantity required by each animal, and therefore they must have an unlimited amount. The best way to supply it is in the form of a running brook or river; and those farmers, who have the command of such where the cattle can go into the water and stand in the shade of trees during the hot part of the day, can provide them with a bovine elysium. Recent sanitary science has shown that the drinking water must be free from sewage contamination, or other source of disease germs; but it is not necessary, nor even desirable to have it “pure,” in the ordinary sense of the term. If cattle have access to spring water, and also to a running burn, they will prefer the latter: the temperature is higher, the water is softer usually, there is more air dissolved in it, so that it is not so flat or insipid, while the probable presence of organic matter seems to render it more palatable to them, and will do no harm so long as it is not the carrier of disease germs. Even the stagnant water of ponds is not to be despised, where running

water is not to be had: the green scum on the surface is nature's scavenger, taking up and utilising the decaying matter which would form a fit breeding place for those malignant germs, if such were introduced.

Salt.—It is a good plan to allow the cattle access to rock salt on the pastures. Most farmers give this ingredient in their winter feeds, but it is strange how few think it necessary to give them an allowance during summer. Animals in a state of nature have been known to travel many miles to lick saline rocks or earth; and this is not very wonderful when we recollect that, in addition to its taste being grateful to the palate, it is required to form one-half of the solid matter of the blood, and has the power of enabling the digestive organs to abstract more nutriment from the food. Cattle require about 4 oz. daily, part of which, of course, is supplied in the ash material of the vegetables they live on. A safer plan than salting the food—for fear of over or under doing it—is to allow them to help themselves, when they will take just what they require, and no more.

Summer Food.—The principal food for a dairy cow in summer is of course grass, which she collects herself; the higher the quality of the pasture the better for the animal, and the quantity allowed may vary from 1 to 3 acres per head. Old pasture will yield more butter and cheese per gallon of milk, but young grass will give the largest quantity where the number of gallons is of importance. In some cases the grass may be so good that nothing more is requisite to make the cows yield their utmost both in quantity and quality; but oftener it will be found that the addition of some extraneous feeding material will pay. This usually takes the form of either of the varieties of cotton cake, and some 2 to 4 lbs. daily is the common allowance. With regard to the use of this, however, a word of caution is necessary. Cotton cake, in common with some other highly nitrogenous foods, is a very prolific source of milk fever and "drop," if its use is not discontinued for a long time before parturition; while if the milk is made into butter or cheese, it often gives an objectionable flavour to these products. No doubt much can be done to counteract this by intelligent and scientific manipulation, but it is easier to do it by using some other food. Oilcake is not so suitable as a food for cows, as it tends to lay on fat, and oil does not produce milk at all. There is nothing to beat bean meal either for quantity, quality, or flavour; and if it is mixed with ground oats, so much the better, though the butter produced from this latter will be rather pale in colour. This meal is best given as a ball of dough—when given alone—made with warm water, and is relished exceedingly by the cows. The comparative values of feeding stuffs, however, will be touched upon again.

It is a good plan to have the pasture close to the byre; if it is too far away the cows waste themselves in unnecessary travelling, while there is a great inducement for the attendants to drive them too quickly, and thus harass them. A cow with a full milk vessel is quite unable to move fast, and it is a great mistake to hurry her.

Forage—In addition to the use of cake or meal, however, it is a good plan, as mentioned above, to give an allowance of green forage material, and for this purpose tares are generally used. It is in the opportunity which arable farms give for the growth of large acreages of forage crops, as an adjunct to the pasture, which has rendered them so easily adapted to dairying where labour and markets suited. Almost anything which produces a bulk of green food may be grown—clover, rye, ryegrass, green oats, tares, &c., and though these have not all the same value as food, yet some one or other of them will suit any given set of circumstances. A mixture of food is always best, however, and we have found from experience one similar to the following is very suitable:—

Tares,	.	.	.	2 bushels.
Rye,	.	.	.	1 bushel.
Oats,	.	.	.	1 bushel.

This quantity sown per acre with a good dressing of farm-yard manure will give good results. Where the climate is suitable, the first break should be sown in autumn, and others at successive times during the season, so as always to have a fresh shift coming forward. If more is grown than the cattle can eat it may be cut and dried into hay, and it will make a most suitable fodder for chopping up into chaff for winter food.

Autumn Food.—Towards the latter part of autumn the place of the tares will be taken by cabbage or soft turnips, and as these are very liable to give an objectionable flavour to the milk and its products, it will be found necessary to serve them to the cattle immediately *after* the milking. By this means the essential oil, or other aromatic compound which exists in the roots, seems to be dissipated out of the system before the next milking comes round. Concerning the use of roots, however, more will be said further on, but it is here merely stated what is the usual practice.

We are now at the transition period between the summer and the winter feeding and management, and this seems a favourable point to introduce one or two subjects which require to be noticed.

Milking.—It is a true saying, that the most difficult part of the management of a dairy is the getting of the cows properly milked. In Scotland it is nearly always women and girls who

do this, while in the south it is men and lads; but the getting of either of them thoroughly trained is a difficult matter in many cases. It is no exaggeration to say that the best animals, fed and cared for in the best manner, may turn out poor yielders, or be utterly ruined, if milked by one who cannot or will not take the milk from them properly. This is one of the operations which is best learnt young, and the chief criterion of ability is *quickness*. It is seldom that a quick milker is a bad one, while quickness goes far to stimulate an inferior animal, and will give a good one a chance of doing her best. The best stimulant to quickness in the attendant is piecework, and it is a known fact that where this work has been done at so much per week, some big records have been made both as regards time and the yield of the cows. Ten cows is the usual number allotted to each person, and it is quite possible, for we have seen it regularly done, to milk these in one hour when in full milk.

There seems to be an increasing dislike to this species of work among the female servants on a farm, and it is difficult to say what is to be done. It is strange, however, that among the many ways of improving dairy matters in the shape of prizes to "Derby" animals, milk records, experiments in feeding &c., nothing should have been attempted in the way of improving the people who milk the cows, by our show authorities or societies, although it is certain that there is no department where there could be more good done, or where there is more encouragement needed. It would not, of course, be easy to devise a method of competition for milkmaids; but still there are no insuperable difficulties in the way, while the good which would result ought to make the matter worthy of consideration.

Milking should be done regularly, quietly, and thoroughly, no scolding or beating, and the last drop to be extracted. There is nothing which tends to lessen the yield of a cow so much as ill-usage or bad milking; and where there are a number of attendants they ought to take the cows in turn, so that the good milkers may help to counteract the bad effects of the inferior milkers. Cows cannot intentionally and deliberately "hold up" their milk; but if they are frightened, the nervousness which is induced has a reflex action, and the tissues of the milk vessels are tightened, so that the milk will not flow so easily.

Everything ought to be done to keep the milk as clean as possible, so that the udders ought to be wiped over before commencing if at all dirty; the attendants ought to wash their hands and keep their nails pared. The last drop should be extracted, and for this purpose some responsible person ought to go round after the regular hands and "strip" them out. These "strippings" are the richest part of the milk, and will amount to about 1 gallon to every twenty-five cows.

Milk Records.—Of recent years we have come to see the value of keeping an account of the milking capabilities of each cow. Where the average yield of each animal over a large herd is the only thing desired, it is not necessary to keep very much of a record, as the total yield divided by the number of animals will give this; but if any good is to result, we must know very much more than a general average. Weighing the milk one day each week is the best way of arriving at reliable data. When done once a week and the totals multiplied by 7, we have the actual yield of each cow separately in pounds, and this sum divided by 10 will give the imperial gallons near enough for all practical purposes. Weighing the milk is a far superior method to measuring, and a spring-balance, with the index adjusted to suit the weight of the can, is the handiest kind of apparatus. There are several good results which flow from a knowledge of the yield of each individual cow, the most notable being the fact that some animals will turn out to be unable to pay for their own living, and are kept at an actual and direct loss. Another thing is that where the calves are reared to become the milk cows of the future, as like produces like, the offspring of good milkers will have the natural constitutional tendency to turn out good milkers also (everything else being right), so that by this system of selection the capabilities of the breed may be improved. Let no farmer think that he knows his good milkers and his bad ones without actual trial, or from the reports of the attendants only: if the real annual yield of each were put down in black and white, there would be no one more astonished than himself.

Very often it is found that a cow which was reckoned good turns out second-rate, the reason being that she gave a large yield for a short time, and then dried up quickly, so that the annual quantity would not be great. On the other hand, many animals which never impressed those working about them with regard to their milking powers really turn up with a large total at the year's end, for the reason that, though they never had much at a time, yet they kept it up for a long period. A farmer can thus weed out the inferior animals, and as much good will accrue to a herd as a whole from this as from any other one thing.

Winter Management.—The change on to the winter feed and management is done gradually. The cattle are kept indoors at night as soon as the weather begins to get cold and stormy. As the time goes on the period they are allowed outside becomes less and less, until they are restricted to about an hour or so, except during very stormy weather, when they should be kept indoors altogether. They should always be allowed outside for a short time, if possible, however, as it gives them exercise—they

can scratch and rub themselves, and have an opportunity of drinking if they so desire. As the time allowed out of doors decreases, so of course does the food given indoors increase: at first a few turnips, then an addition of fodder in the shape of straw or hay, with meals or cake over and above. As the summer milking cows are usually put dry on the approach of winter, they may at the same time be put on to "maintenance diet," and indeed the quickest way to put them dry is to restrict the feeding for a time. When a cow is not in milk, and has only her own body and the growing foetus to keep up, she will do with very much less food than when in milk; but she must be by no means starved, though cakes and meals or other rich foods may, and in fact ought, to be dispensed with. Where roots are used the order of these is—first, soft turnips; next, swedes; and then mangolds in the spring time, when these latter have thoroughly matured their juices.

As the springtime approaches they are allowed to go out during an increasingly longer period each day—the time depending on the weather—until they are out the whole day, and then afterwards at night. The indoor feed is usually kept up until the season is pretty far advanced, and until the grass outside is sufficient to take its place. The most of them will have calved long before they are "out to the grass," and such will be put on to a rich milk-producing diet immediately they have recovered from the exhaustive effects of parturition. A few days before calving, however, it is a commendable and safe plan to give each a purgative—this "cleans them out," and acts as a wonderful preventive of any bad results at the birth of the young.

Regarding their winter indoor management there are several matters of general application which must be mentioned.

Ventilation.—First, there is the ventilation of the byres or cowhouses, a matter very often neglected in practice to the very great detriment of the health of the animals and of their owner's pocket. A narrow, dark, ill-ventilated house is a great predisposing cause of trouble among stock. The Government authorities have done good service in insisting that all new milk dairies shall have a certain amount of cubic space for each cow, and that there shall also be abundance of light and air. It is not necessary to have the walls very high—9 feet is quite sufficient; while the windows can be either in the roof or walls according to circumstances. The ventilators, however, should always be in the roof along the ridge: heated air always rises, and can thus get out most readily at the top, carrying all the vitiated products of respiration, perspiration, &c., along with it. There should be an opening on each side and the ridge-plate or board carried down between: this ensures that from whichever side the wind blows it will enter and be deflected downwards,

while the inside air comes up out the other side. Thus there will be air without draughts, even when all the doors and windows are shut up.

Temperature.—In connection with the ventilation, there is the equally important point of the temperature. It has been often stated that 65° F. is the proper temperature for a byre. The writer has no hesitation in saying—as the result of his own trials—that this is about 10° too high, and that 55° is quite sufficient and better for the animals. The proper point to aim at is to have them warm and comfortable, so that there may be no waste of food in keeping up the heat of the body by respiration; and, on the other hand, not to have them so hot that they perspire too much, and thus waste themselves in another way. There is one other point, however, which militates quite as much against the higher temperature as anything, and that is their greater liability to take chills and “woeds” (catarrh of the udder) when turned out daily, or when standing opposite a door which requires to be kept open for some time. The lower temperature will, in fact, make them more hardy; and from experience we can say that it is high enough to let them yield their best.

Cleanliness.—Quite as important as regards health and a good yield is cleanliness. Animals in a state of nature never do get dirty, or at any rate are able to help themselves in the matter. Cattle tied up to a stake, however, are quite helpless, and therefore their masters must do something for them. A great deal depends on the style and arrangement of the stalls, as if these are properly made, the animal can stand and lie clean without any trouble. The style adopted in the south-west of Scotland and other Scottish dairy districts is the best: a low fire-clay manger in front, with a wide and deep gutter behind, the bed being of such a length as just to allow the cow to stand or lie with the head above the manger. With such an arrangement, the droppings will always fall into the gutter, and the animals be dry and clean. The style adopted in the south of having the manglers built up high, with scarcely any gutter at all behind, is the way *not* to do it.

The currycomb and dandy-brush should always be liberally applied, and the cows will be grateful for it. It will also be found a good plan to wash their backs, &c, with some sheep-dipping composition occasionally, for the purpose of keeping down vermin.

The New-Milk Trade.—We now come to the consideration of the management of herds devoted to the supply of new milk which must be kept up all the year round. The summer treatment will be pretty much like those where cheese or butter is made, with this difference, that whereas in these latter the

quality of the milk is of more importance than the quantity, the quantity is the main factor for the milk trade, and therefore the animals can be allowed a greater amount of succulent forage. We do not mean to say that those in the new-milk trade should lay themselves out to produce a large quantity of poor milk, but as long as milk dealers and the public do not adequately recognise the difference between milk containing 3 per cent. of butter-fat and that containing 4 per cent., or over, so long will it remain unprofitable for farmers to produce the higher quality. We have known dealers who would not have milk with more than 10 per cent. of cream, by the gauge; and others who desired 15 per cent. or over. A producer would require to feed his cows accordingly, and the giving or withholding of some cotton cake or other nitrogenous food will easily regulate the cream percentage within certain limits. Milk which is consumed within a day or so of its production will have little time to develop bad flavours from the effects of particular kinds of food, as would be the case with butter or cheese.

Management.—The greatest difference in the management, however, as compared with a cheese dairy, is in the timing of the calving of the cows. It is manifest that it would be a great mistake to have the cows all calving at one time in the spring; for, as it is necessary to keep the supply of milk as nearly alike at all times as possible, it is advisable to have them dropping their young at all times the whole year round. In a dairy of fifty cows or so, it would suit to have one coming into work every week on an average, but in practice it will be found more suitable to have them coming in greater numbers at one time than another. For instance, there must not be too many during the natural flush of the milk at midsummer, and also because they tend to go dry at the usual period in the beginning of winter. Thus there are the two seasons of early spring and late autumn most suitable for the greater proportion to arrive at parturition. Nevertheless, it will not be found expedient to shut up the bull at any time, but he must be kept constantly with the cows. No doubt the time of each cow's calving will tend to shift forward a month or so each time—that is, if a cow is served during her first heat, she will have her next calf in less than twelve months; but, on the other hand, there is always a proportion which will “come back” into a second period of heat, so that the twelve months may be often exceeded. The life of a cow is usually so short that the extra drain on the system from excessive milking and breeding will not matter much under ordinary circumstances. In this way the number of cows in milk, or the quantity of milk yielded, can always be kept near a fixed standard if so desired.

Milk Yield.—Cows in a dairy of this sort will usually yield

more gallons during the twelve months than those in work in a summer dairy only. The reason of this is, of course, that while in the latter they are intentionally put dry at the end of nine months or so, in the former they are encouraged to go on yielding as long as possible—perhaps up till within a month of the next calving, while a few may have their calves with less than twelve months between. Of course, extra milking means extra food, as the animals must have material out of which to manufacture the milk. It becomes a question, however, how far it is profitable to force a cow by excessive feeding beyond her natural capabilities; and it may almost be accepted as a fact, that it is a mistake to carry it out to any great extent. The system pursued at Rothampstead by Sir J. Lawes and Dr Gilbert is a very sensible one, but unfortunately involves too much labour and trouble for ordinary practice. At the above place a cow is fed according to the quantity of milk she yields: she gets, say, 6 lbs. of cake daily when yielding 30 lbs. of milk. This feed is kept up until she naturally begins to fail, and then it is lowered in proportion, so that, say, an animal has dropped to 20 lbs. daily, then her cake would also be dropped to 4 lbs. It is a matter of proportion; for if a cow is sufficiently well fed with 6 lbs. of cake while yielding 30 lbs. of milk, she must be equally as well off with 4 lbs. to a 20 lbs. yield.

Feeding.—Unfortunately the winter yield of milk has to a certain extent to be kept up against nature by a forcing feed. Naturally the cows would give their full yield in the summer time when the grass is at its best, and to make them do the same at mid-winter means a large quantity of rich and costly food. The experience of the writer is that—reducing everything to market prices—it will cost from two to three times as much to keep a cow during the winter seven months as during the summer five; in other words, if it costs £4 to £5 in summer, it will cost £10 to £12 in winter, and even then the winter yield will hardly be so good as that in summer. The winter milk trade is therefore not a profitable one, the small extra price per gallon not being anything like in proportion to the greater cost of production.

Foods.—The general style of feeding has already been touched upon, and we may now consider the question of food more particularly. The use of food in an animal is threefold—first, to be consumed in the lungs to supply animal heat and “force”; secondly, to supply material to make up for the tear and wear of the tissues, or for the growth of the same; and, lastly, in a cow, to make milk. It is this latter, of course, that we, as dairymen, are specially concerned with; but the others are quite as important, and we may just note how the food ingredients are allotted in the system. All food contains six “proxi-

mate constituents"—water, albuminoids, fats, carbohydrates (starch, sugar, &c.), fibre, and ashes. Water is of use as a solvent and vehicle for the others; albuminoids are the nitrogenous parts which specially go to form flesh and muscle, and hence are called "flesh-formers"; fats or oils go to be oxidised in the lungs for heat, and are therefore known as "heat-producers"; the carbohydrates serve the same purpose as fat or oil, only in a lesser degree,—1 of fat being equivalent to 2·3 of starch for food purposes,—while the surplus of both is stored up as animal fat in the tissues; fibre is the indigestible part which serves to give bulk to the food, so as to suit the large stomachs of the cow; and the ash goes principally to make bone, but is also found in other parts. All these elements must be present and in proper quantity, because there are special parts of the digestive track set apart for acting on each one. It has been found that the nitrogenous portion should bear to the non-nitrogenous a ratio of 1 to 5 or 6, and this is called the "albuminoid ratio," or "nutritive ratio." The non-nitrogenous portion consists of the fats, oils, starch, gum, sugar, &c., and the fatty part must be brought to the same value as the starch by multiplying by 2·3. If any one who has found that the rations he gives to his cows keeps them in good health and in good milking condition, will take the trouble to work out the proportions from the analyses and number of lbs. of each kind of food (cake, meal, hay, &c.), he will find the figures to come out very nearly 1 to 5 or 6.

Relation of Food and Milk.—The effect of foods on the milk is the main point to be noticed. Naturally we would expect that the albuminoids, fats, &c., of the food would go to form the corresponding bodies in the milk; but this is not the case. The caseine as developed in the cells of the milk-glands seems to be the excreted nitrogenous waste of the body, and, though no doubt eventually derived from the nitrogenous matter of the food, depends more immediately on the exercise which the cow gets. This is most likely one of the reasons why our Ayrshires are so suitable for cheese-making; they have been developed in a district where they have had to tramp around a good deal to get their bellies filled. Again, the butter fats of the milk are not derived from the fats or starch of the food, but from the albuminoids. In practice we never find such foods as rice, maize, or oilcake satisfactory, starch and oil being the leading ingredients; while nitrogenous foods, like beans or cotton cake, have an immediate effect on the cream-yield and total solids. As a general rule, rich foods will give rich milk. The question of the market cost of each, however, and the readiness with which it can be obtained, is of great importance; and it is easy to see that

anything grown on the farm must be usually cheaper than it can be bought. Of recent years the extreme cheapness of wheat has caused many queries to be put in the farm papers relative to its suitability for dairy cows. Mr John Speir, of Cambuslang, has shown, in an article contributed to the *North British Agriculturist*, that it is very suitable, both from theory and from his own practice. Wheat in the shape of flour, or scones, or bread, is an excessively starchy food, and would not suit a cow; but the grain ground up with the bran and other coats is another matter, and comes out with our albuminoid ratio of 1 to 5. Bran is generally given as a separate item, but here we have it all without any expense or trouble. Beans have made a name for themselves as a food for dairy cows, but prices and handiness may make it more desirable to use something else. The writer uses a mixture of beans, oats, and bran. Foods must not be given in too concentrated a form, for the reason that the "stomachs" of the cow are intended to deal with bulky material, not always of the most nutritious description; while the power of ruminating implies a thorough mastication and saturation with saliva, so as to assimilate all the nutriment out of everything. There must therefore be always a fair share of fodder—either straw or hay—to give them material for exercising this ruminating power.

Effect of Cold.—The greatest drawback to a cow yielding full milk in winter is the cold—a frosty night or day being immediately followed by a decrease in the milk yield. For those animals which are dry, of course, it does not matter so much; but for those in milk there should be an endeavour made to keep them as warm and comfortable as possible without overdoing it. One of the best things for promoting this end is the use of warmed food. It has been proved over and over again as the result of direct experiment and of general practice, that cold food retards the flow of milk, while if it is warmed it promotes it. Such foods as fodder, cakes, &c., are such bad "conductors" of heat that they never feel cold to the touch in frosty weather, and therefore warming these—even if it could be done—would do no good; but when we come to such things as water itself, turnips, &c., where there is much moisture, something is required to be done. In Scotland there is a common practice of giving "boiling"—that is, warm mashes composed of chaff or chop mixed with meals, and made into a sloppy mess with warm water. There is no practice more commendable than this, and nothing more suitable for keeping up the milk yield; besides it is the most convenient method of giving meals of any kind, and of utilising "shorts," "tails," and any odds and ends of fodder which can be passed through the chaffcutter. On the other hand, there is nothing more detrimental to the quality and quantity of the

milk than the use of cold roots. Roots are always cold, but when they are actually frozen they are ten times worse, and it is a wonder that there is not more positive injury caused by them. It is certain that the estimation they are held in as food substances is far above what they really deserve. Roots generally have upwards of 90 per cent. of water in their composition—that is to say, out of every 10 cart-loads there are 9 of water—which water could be more economically supplied by the pump or spigot. Further, it costs from £8 to £10 per acre to grow them—that is, about 8s. to 10s. per ton—and they are not worth to eat so much as this at the comparative prices of other foods. It is argued that as they are “green” food they have special nutritive or digestive value: to this it may be answered that neither practice nor science has found that they are any better or so good as warm mashes, while the latter are far and away the cheapest. It is of course absolutely necessary to give cows succulent sloppy food while in milk at this period of the year, but it will be found when everything is taken into account that the cheapest and best is that made with chop, meal, and warm water—“sappy,” and not “steamed” merely. The writer has elsewhere gone pretty fully into the comparative values of roots, ensilage, and mash, as winter foods for cows (*Live Stock Journal Almanac*, 1887), and does not wish to repeat himself too much; while the system of farming to be followed when roots are left out of the rotation is outside the scope of this essay, though a cheaper and more efficient substitute will be found in tares or other forage material grown for hay, to be afterwards cut up into chop.

It is usually considered that mangolds are better food for milk cows than turnips, as they increase the yield: the result of an experiment tried by the writer extending over a period of four weeks is directly opposed to this. It was found that, weight for weight, mangolds gave 6 per cent. less milk than turnips, and slightly less cream: the Rothamstead experiments showed ensilage to be practically scarcely any better than mangolds.

The following tables of rations are taken from some in actual practice by different people, and may serve to illustrate the winter food of a cow in milk:—

(1)	
5 A.M., . . .	2 lbs. decorticated cotton cake.
7 ”	warm mash.
8 ”	4 lbs. oat straw
12 NOON	8 lbs. hay.
3 P.M.,	warm mash.
6 ”	8 lbs. oat straw.

The warm mashes in the above consist each of about 5 lbs. chop, 2 lbs. of meal (bean and oat mixed), 2 lbs. of bran, 20 lbs. water—all together forming about a bucketful.

(2)		lbs.
Maize meal,		4
Decorticated cotton cake,		4
Pulped roots,		20
Chop with pulp,		10
Hay <i>ad lib.</i>		
(3)		lbs.
Rape cake,		6
Malt coombs,		1
Roots,		28
Bran,		2
(All cooked together.)		
Hay,		9
(4)		lbs.
Bean meal,		2
Pease meal,		1½
Maize meal,		1½
Bran,		1½
Linseed cake,		1
Chop,		7
(All mixed with boiling water.)		
Pulped turnips with }		18
Straw chop, }		9
Straw <i>ad lib.</i>		
(5)		lbs.
Cotton cake (undecorticated),		4
Turnips,		56
Hay or straw <i>ad lib.</i>		

There is, of course, no hard and fast rule about quantities and kinds. Different animals will require different amounts, not only with respect to those of different breeds, but also as between animals of the same breed, although this paper has been written with special reference to Ayrshires. Further, the price and accessibility of materials will have much to do with the matter. A cow should have as much as she can eat, but no more; while a good cow will respond more readily to generous rations than an inferior animal. Regularity in feeding is a great matter, and it is usually easy to carry it out in practice. When regular, the animals will soon know to lie down and rest between the feeding times, placidly chew their cud, and thus conduce directly to the formation of milk. Any change in the food should be done gradually, as a very sudden one might upset their digestive organs, and decrease the milk yield for the time, even although it may be on to a better class of food.

The principal points connected with the feeding and management of cows have been touched upon, and there is not time or space to go into them more fully, but it may be said, in conclusion, that the more close personal attention is given to them the better will the money results be.

CHEMICAL DEPARTMENT.

REPORTS by Dr AITKEN, Chemist to the Society.

I. POTATO CROP, HARELAW, 1886,

PREVIOUS to the present crop of potatoes the station at Harelaw had been under two four-course rotations; the first was turnips, barley, grass, and oats, and the second was turnips, barley, oats, oats. No manure was applied for the second and third crops of the first rotation, nor for the third crop of the second rotation. The manures were withheld during the first rotation, as it was found that the natural strength of the soil was such as to swamp the manures applied, and render it difficult to trace the effects due to their immediate application. Practically, the manuring may be considered to have begun with the first oat crop in 1881, and since then the ordinary manures under investigation were applied every year with the exception of 1884. It was the opinion of the Chemical Committee, that as the lease of the station was drawing to a close, it would be interesting to see what was the residual value of the four years' manuring available for the growth of a potato crop. Accordingly each plot on the station was divided into an upper and lower half; on the upper half no manures were applied, and on the lower half the manures were applied as usual. The plots braided very regularly but somewhat feebly on the unmanured half, and the only thing which occurred to interfere with the accuracy of the experiments was the depredations of rooks, which abound in the locality. In spite of most assiduous herding, there were no plots that escaped their attention, and there were two plots much more severely thinned than others. Careful notes were taken during repeated visits, in order that the disturbance due to that cause might be as nearly as possible taken account of in estimating the amount of the crops. But it was found that the damage was very evenly distributed over the field, except on plots 11 and 12, and on a few others which will be mentioned later. The manures were put in under most favourable conditions on 26th April, and the seed was put in on 27th and 30th April.

The potatoes were lifted during the last week of November, when a break of fine dry weather occurred most opportunely. The season was somewhat wet at first, but upon the whole it may be regarded as a favourable season for potatoes, and the crop in the neighbourhood was about an average crop, and entirely free from disease. The actual weights of the potatoes gathered from each half plot of an eighth acre are given on

Tables II. and III., pp. 228, 229, showing the amount of large, medium, and small potatoes, and also the total weights per acre in each case. The average weight per acre of the crop grown on the unmanured section (Table II.) is 3 tons 2 cwt., but in this average is included the produce of a few plots which from the beginning have had certain manurial constituents withheld from them or which have had less than the normal amount of manure applied to them. If we exclude these, the average crop grown on the unmanured section is exactly 4 tons per acre, which may be regarded as half a crop. On the manured section the total average is 5 tons 12 cwt. per acre, but excluding the deficiently manured plots it is 6 tons 3 cwt. per acre, or about two-thirds of a crop. Considering that no dung has been put on the field these twelve years, that may be regarded as a fairly good result from an agricultural point of view; but it must always be kept in mind in regard to these experiments that the obtaining of a large crop is the thing which we chiefly desire to avoid, and the main fault we have had to find with Harelaw station in the past is, that the crops produced were too large, so large as to interfere with the object we have in view. What we wish to note is the specific effects produced by the various manurial ingredients we are applying, so that we may discover which of the manures in common use are most worthy of the attention of farmers, and which manurial constituents are most important for the growth of the different crops we are growing. The smallness of the crop grown at Harelaw this year is very favourable to our purpose, and the information supplied by the potato crop this year is more important than that obtained from any former crop produced upon the station.

We shall first consider what are the lessons taught by the crops on the unmanured section. As we have pointed out, the object in view in growing potatoes without manure was to see which of the manures applied in former seasons produced the greatest amount of residual fertility, or, in other words, which was most beneficial in accumulating fertility in the soil. As regards the phosphatic manures, we find that plot 5, manured with *bone meal*, gives the largest return, and thus corroborates the common opinion that bone meal is the best form of phosphate for building up the fertility of the land. The pre-eminence of bone meal in this respect is still more clearly shown on Table IV., p. 230, where in the last column is noted the increase of each plot over that of plot 27, which was from the beginning of the experiments cropped without manure. The crop on that plot is produced from the fertility resident in the soil, and by subtracting the amount of the produce of that plot from that of all the others we get some idea of the increase of crop due to our own manuring. As regards the other forms of phosphate,

it is noteworthy that the insoluble phosphates as a whole have left more of their substance behind them than the dissolved phosphates. The only exception is *ground coprolites* (plot 3), which has done less for the crop than the superphosphate, made from it. This may perhaps be attributable to the coarseness of the stuff. It is not usually ground so finely as is required to make it profitable for direct application to the soil. It is ground to a fineness suitable for making it into superphosphate, but that falls far short of what is necessary to make it an active manure when applied undissolved. *Bone ash* has left a considerable residue, due no doubt to the fact that while it is a comparatively coarse powder, it has this advantage over ground coprolites, that it is exceedingly porous, and therefore able to be penetrated by the solvents in the soil, so that while coarsely ground coprolites will remain as little hard particles in the soil for many years, the soft bits of bone ash are decomposed in a year or two. *Dissolved bones* has also left a considerable residue, due not so much to the part dissolved as to the numerous pieces of bony matter which, though softened, have not been entirely dissolved by sulphuric acid. The plots on which the least residue has been left are plots 8 and 9, and these are the plots which, owing to disease, grew a very small crop of oats last year. It might be expected that, as a small crop was produced last year, there would be all the more manurial residue left for the benefit of the potato crop, but that does not by any means follow, for a small oat crop leaves a smaller amount of roots in the soil, so that the succeeding crop suffers for the want of nitrogenous organic matter.

The fluctuations due to various circumstances, some of which are accidental, render it very unsafe to draw conclusions from the results of a single year. We shall have to go back for some years in order to gauge the relative fertility of the various plots, and we should have to go forward for some years in order to judge of the relative exhaustion. As it happens that four white crops have been grown on Harclaw in the former five years, we have the means of forming a better estimate of the fertility of the various plots than is usual under ordinary farming conditions. On Table VI. will be found a synopsis of the produce of the first ten plots in the last four years of white crop, and it is found that the total produce of the plots with undissolved phosphate does not range very widely. In 1885 plots 8 and 9 were severely affected with tulip-root, and in order to prevent our being misled by this circumstance, allowance must be made for it. We have fortunately the means of doing so by comparing the produce in 1885 with that of the former year, when no manure was used. But for the disease the crop would have exceeded that of the former year in the same

ratio as the other plots, and therefore an estimate of the damage due to disease is made in the table. When that is done it is seen that the total produce of the four years does not vary so much as a tenth between the highest and the lowest of the plots manured with different insoluble phosphates, and the same is true of the soluble phosphate plots. It is seen that phosphatic guano has been most productive, and bone ash and ground mineral phosphate the least productive. Among the dissolved phosphates dissolved bone ash and dissolved coprolites have produced the largest crops.

Now that the manures have been withheld for a year, and a crop of potatoes grown, we are able to judge in some measure of the amount of active residue which these manures have left behind them. Among the insoluble phosphates the *bone meal* plot, which had hitherto held a medium position, now comes to the front, and next to it is *bone ash*, which was formerly the lowest of the series. Among the dissolved manures, dissolved coprolites show an unexpected superiority, and next to it dissolved bones, while the residues left by dissolved phosphatic guano and dissolved mineral phosphate seem to be much less considerable. It will be seen, however, that upon the whole there is a compensatory result obtained, or a kind of equilibrium established, when the potato crop is compared with the former grain crops, so that if the two are added together, the combined produce of grain and potatoes do not differ very much in the phosphate plots. The total number of pounds per acre are as follow:—

Manures.	Plots.	Undissolved.	Plots.	Dissolved.
Bone ash, . . .	1	21,352	2	22,485
Coprolites, . . .	3	20,786	4	22,580
Bones,	5	22,091	6	21,804
Phosphatic guano, .	7	21,347	8	20,224
Mineral phosphate,	9	20,137	10	20,276

As regards plots 11 and 12, they are seen to be a failure, but that is not to be attributed altogether to the deficiency in the manures applied to them, for these two plots were severely thinned by rooks, so that no conclusions can be drawn from them.

The plots 13 to 18, designed to test various nitrogenous manures, are very instructive. The largest crop is that on plot 17, from which nitrogenous manures have been withheld in former years. The amount of grain produced on that plot during the preceding five years was slightly below the level of the others, and the result is that a larger residue has been left for

the potato crop; but the most noteworthy result is that of plot 18, which has hitherto been manured with *nitrate of soda* alone, and which in former years produced rather more grain than the other plots. It is now seen, on withholding of nitrate of soda for one season, that this repeated dosing with nitrate of soda alone has had a very detrimental effect upon the land. The soil has evidently been much reduced by the constant drain of other manurial wealth, so that it is now at a low level of fertility. Similarly, it would seem that plot 13, which received its nitrogen in the form of nitrate of soda, though always otherwise fully manured, has also less residual fertility than the remaining plots of the series. In this respect it compares unfavourably with the sulphate of ammonia plot and the dried blood plot, which are exactly on a level. The horn dust plot is now slightly behind these in immediately available fertility.

Sulphate of potash (plot 19) has left a smaller residue for the potato crop than its neighbour (plot 20), which has had muriate of potash applied to it. The grain produced in these two plots in former years was nearly the same in amount, though the sulphate had a slight advantage. The want of potash in plot 21 has had an injurious effect on the potato crop, although the effect of this deficiency on the former grain crops was little felt. The importance of potash to the potato crop is strikingly illustrated on plot 22, which, from the beginning of the experiments, has been manured with *potash salts* alone. The amount of grain produced in that plot in the former five years was about 20 per cent. less than on plot 17, and 25 per cent. less than on plots 19 and 20; but the potash has evidently been retained by the soil, and has now become available for the potato crop. It is a remarkable and very surprising fact that this plot has produced the largest crop in the unmanured section. It shows not only that potash salts remain in the soil for the use of after crops, but it shows how important a substance potash is for the growth of the potato crop. There need be no doubt that in comparison with the other plots on the station, plot 22 must have in its soil a relatively large proportion of potash, and it is to this that we must attribute its superiority as a subject for potato growing.

Among the guano plots the largest residue has been left by Peruvian guano, and that may be due to its containing more potash than the others. The fish guano plot produced more grain than the others, while Ichaboe has been less productive hitherto, and has also left the smallest effective residue.

The three superphosphate plots (28, 29, 30) are instructive. They have all left a considerable residue. The largest residue is left by plot 28, whose phosphate was least dissolved, and the smallest residue by plot 30, whose phosphate was most dissolved.

This quite corroborates the result obtained on the first ten plots already referred to, but on referring to the quantities of grain produced in former years, the same order is maintained. The quantities were—

	Total Grain of Four Crops.	Potato Crop.
	Lbs. per acre.	Lbs. per acre.
10 per cent. dissolved,	12,162	10,592
25 per cent. do.	11,921	10,360
40 per cent. do.	11,828	9,656

So that the phosphate that was most dissolved, not only produced the smallest crops of grain, but also left least residue for the potato crop.

Among the most interesting plots on the station is plot 35, whose nitrogen has all along been supplied in the form of rape dust. This has always been a satisfactory manure, and the plot has been steadily improving year by year. It is evident that there is still a considerable residue of it in the soil, and it may be regarded as a sound manure for sustaining the fertility of the land as regards nitrogenous matter, and it is probable that the large amount of organic matter in the manure has also exerted a beneficial influence. These results obtained with the potato crop are interesting, as bearing on the question of unexhausted fertility derived from the application of light manures, but a further experiment of the same kind with a cereal crop will put us in possession of still more definite information.

MANURED SECTION.

The kinds and quantities of manure applied to the lower half of each plot are given on Table I., p. 227. The basis on which they were applied was that each plot should receive per acre 56 lbs. of ammonia, 64 lbs. of potash, and 120 lbs. of phosphoric acid, in whatever form these constituents might be given.

Phosphatic Manures.—It has been the practice hitherto to apply the ground phosphates in the state in which they were sold in the market, but as these substances are produced in varying states of fineness, and as the fineness materially affects the efficiency of the manures, the ground coprolites, phosphatic guano, and ground mineral phosphate used for this crop were sifted through a sieve of 120 wires per linear inch. These manures were thus for the first time applied in as nearly as possible the same state of fineness, and more nearly approaching the condition of superphosphate. We should, therefore, expect

that the differences which have hitherto existed in these plots should now be less marked, and we find that, on the whole, to be the case, as the following table shows:—

		Lbs. per acre.	
<i>Manured Section.</i>		Undissolved.	Dissolved.
1 and 2.	Bone ash, . .	12,488	12,848
3 and 4.	Coprolites, . .	13,608	14,088
5 and 6.	Bones, . .	13,272	12,768
7 and 8.	Phosphatic guano, . .	13,776	13,496
9 and 10.	Mineral, . .	12,240	14,752
Average, . .		13,077	13,430
<i>Unmanured Section.</i>			
Average, . .		9,173	8,082
Excess of manured over unmanured portions: average,		3,904	4,448

Plots 2 and 9 are inferior to the rest, but that is only an apparent inferiority, for these two plots, owing to the attacks of the rooks, or to some other cause, were very blanky. Two-thirds of the middle drill of plot 2 and one-half of a drill on plot 9 were quite bare, and it was reckoned during the period of full leaf that one-eighth of plot 2 and one-tenth of plot 9 were lost from that cause. If these deficiencies were made up, the crop on plot 2 would be 13,596 lbs., and that on plot 9 would be 13,464 lbs. per acre. It will thus be seen that the fineness of grinding has had the result of causing the undissolved phosphate to almost equal the dissolved phosphate in manurial activity, and it has caused the inequalities which prevailed among insoluble phosphates in former years almost to disappear. Bone ash gives the lowest result, but that is explained by the fact that it was put on in coarser condition, as it could not be sifted. The bone meal was as fine as it could be got; 90 per cent. passing an eighth-inch sieve. Had these been ground as finely as the others, there seems no reason to doubt that they would have produced as good a crop.

Owing to the circumstance that one-half of each plot has been left unmanured, we have the means of gauging the net manurial value of the various manures applied. This is shown on Table V., where in the last column is given the increase of the manured over the unmanured half of each plot.

The average increase of the manured over the unmanured crop on the plots with undissolved phosphates is 3904 lbs. per

acre, which is an increase of $42\frac{1}{2}$ per cent.; while on the plots with dissolved phosphates it is 4448 lbs., which is an increase of $49\frac{1}{2}$ per cent. There is thus an advantage of 7 per cent. on the side of the soluble phosphates, but that is not a sufficient increase to counterbalance the cost of dissolving the phosphates, so that the smaller crop grown with undissolved phosphates finely ground has been more profitable than the larger crop grown with dissolved phosphates. This result corroborates those obtained by Mr Jamieson in the Aberdeenshire experiments,

Nitrogenous Manures.—The superiority of sulphate of ammonia over nitrate of soda when applied as a manure to the potato crop is here apparent, and we have seen that on the unmanured portion the residual fertility derived from its application in former years is greater than that from nitrate of soda, so that in using sulphate of ammonia instead of nitrate of soda there is the twofold advantage of doing more for the potato crop, and of leaving more for the crop which follows. Still more striking are the results obtained on plots 31 and 32, where these two manures were applied in double quantity. The double dose of nitrate has given a better result than the single dose on plot 13, though not quite up to the level of the single dose of sulphate of ammonia on plot 14, while the double dose of sulphate of ammonia (plot 32) has produced fully 8 tons of potatoes per acre—the largest crop on the station. The considerable increase caused by the double dose of ammonia, and also by the double dose of potash salts (plot 33), shows that the general manure we have been applying to the stations is not a properly balanced manure for raising a potato crop without dung. A manure consisting of equal parts bone meal, sulphate of potash, and nitrate of soda, or of three-fifths superphosphate, one-fifth sulphate of ammonia, and one-fifth muriate of potash, would have produced better results. It must be remembered, however, that no dung has been used in raising the crop. Had dung been used, it is probable that the nitrate of soda would have proved the more efficacious manure. Professor Macreker has recently published the results of a series of experiments with these two manures upon the potato crop, which seem to show pretty clearly that, while sulphate of ammonia may excel nitrate of soda as a potato manure where no dung is applied, yet it is distinctly inferior to it when it is applied along with dung; and in another part of this volume, page 232, are given the details of a small experiment at Harelaw in 1881, which quite corroborate Macreker's conclusions as regards the effect of dung. The result obtained by Professor Maercker are fairly consistent, but it is noteworthy that in his experiments without dung the superiority of sulphate of ammonia is not so clearly demonstrated as in the Harelaw experiments.

Horn dust and dried blood are seen to be less efficacious than either of these two soluble nitrogenous manures in immediately assisting the potato crop, although, as we have seen, they are about equal to sulphate of ammonia, and much better than nitrate of soda in leaving in the land a residue for the benefit of the succeeding crop. Plot 17, which had phosphates and potash applied to it but no nitrogen, has not produced so large a crop on the manured as on the unmanured half. This unlooked-for result is accounted for by the patchiness of the crop, but whether that was due to interference or to the failure of the braird owing to the want of nitrogen, combined with an excess of the other two manurial ingredients, it is impossible to say. The plot was distinguished by its very light green colour, in which respect it formed a strong contrast with the neighbouring plot No. 18, to which nitrate of soda alone was applied. The crop on plot 18 is seen to be a very small one, only about half the bulk of that grown upon the fully manured plots, yet decidedly better than that on the unmanured half. The nitrate of soda applied has evidently succeeded in working out a little more of the phosphates and potash salts resident in the soil, and the increase of crop must be considered to be obtained at the expense of these substances.

Potash Manures.—The sulphate and the muriate of potash (plots 19 and 20) have produced nearly the same amount of crop, with a slight difference in favour of the latter. The over-ground growth, when in full leaf, was more abundant on plot 19, and gave the promise of a much heavier crop, but owing to the greater amount of residual fertility in plot 20, the leaf on that plot remained longer green, and the tubers continued to grow after those on the neighbouring plot had attained their maximum growth. Plot 21, manured with phosphates and nitrate of soda, but without potash, is a failure. It resembled plot 18. The small stunted stems had a dark green colour, and looked a miserable crop. The crop on plot 22, which had its usual dose of potash salts put on it, had a fine, bright, healthy appearance, and was one of the few plots on which the manured and unmanured halves showed no difference in appearance. It is evident that the potash remaining in the soil from former manurings was abundantly sufficient for the growth of the crop, so that the additional dose was in excess of what was necessary to enable the crop to make use of the limited supply of phosphates and nitrogen proper to the soil. For want of phosphatic and nitrogenous matter, the extra potash was therefore useless; but had there been applied to this plot an ordinary dose of phosphates and nitrogenous manure, there can be no doubt that the extra potash would then have come into operation, and greatly increased the crop. As a proof of this, we have only to look at plot 33, which has hitherto had a general manure

applied to it, but has this year received in addition a double dose of potash, and the result is that it has produced one of the best crops on the station.

Regarding the guano plots there is little to record. Peruvian guano gave the best result, but it was not up to average. It probably owed its superiority to the potash residue it contained. Fish guano and Ichaboe guano are both very deficient in potash, and as no additional potash was applied to these plots in former years, the deficiency may easily be attributable to that cause. The importance of potash in raising a crop of potatoes has been clearly demonstrated in these experiments. Plots 12, 18, and 21 were all failures, owing in great measure to the want of potash; and plot 22, with potash alone, bore a fairly good crop. So also plot 26, which is an exhausted plot—having been frequently cropped without manure—and which on the unmanured half was scarcely so good as its neighbour that had been entirely unmanured for nine years, produced this year on the manured half a very good crop (more than double that of the unmanured half), chiefly on account of its having received for this one crop a double dose of potash salts. Plot 33, which has all along been well manured, has produced a very fair crop— $6\frac{1}{2}$ tons per acre—and it also received a double dose of potash in the form of sulphate of potash. Its neighbour (plot 34) was manured with a double dose of potash in the form of muriate of potash. It had been very much exhausted from former cropping, but it also bore a good crop, more than double the amount of the unmanured half.

Superphosphates.—The medium superphosphate, with 25 per cent. soluble, has given a better result than the other two, as it has frequently done before, showing that the ordinary cheap superphosphate, containing about 28 per cent. soluble phosphate, is the best for practical purposes, and more economical than what are called high-class superphosphates.

The plot whose nitrogen was supplied in rape dust (plot 35) has yielded a crop above average; but, of course, this result was in part owing to the residual fertility produced from former applications of that manure.

Size of Potatoes.—It is evident that the size of the individual potatoes, as well as the total weight per acre, is under the influence of manuring. On Tables IV. and V. is given the percentage of large, medium, and small potatoes produced on each plot, and it is seen that they vary very widely. In the first place, the manured section has produced a larger proportion of large tubers than the unmanured section. The relative proportions are—

		Manured.	Unmanured.
Large potatoes,	. . .	71.0 per cent.	62.4 per cent.
Medium "	. . .	19.0 "	24.2 "
Small "	. . .	10.0 "	13.4 "

The large potatoes were sold at 65s. per ton, the medium ones at 40s. per ton, and the small ones at 20s. per ton. It is therefore of importance from a commercial point of view that the crop should contain as great a proportion as possible of large tubers. If we examine the results a little more closely, we see that among the manured plots there are some which have a higher proportion of large tubers than others, and that this advantage is not due to accidental differences, but that it can in great measure be traced to the characters of the manures applied. Fortunately, there are six plots which have all along been manured in such a way as to enable us to discern what is the individual effect of each of the three manurial constituents, viz., phosphates, potash, and nitrogen, and an examination of these gives us the information we desire.

We at once see that potash is the constituent in a potato manure that is chiefly concerned in giving extra size to the potatoes. If we arrange these six plots according as they have or have not had potash applied to them, the effect of that constituent becomes immediately apparent:—

Plot.	Manures.	Percentage of large Tubers.
22	Potash alone,	71·4
11	Potash and nitrate (no phosphate),	75·5
17	Potash and phosphate (no nitrogen),	75·3
12	Phosphate alone,	64·4
18	Nitrate alone,	60·5
21	Phosphate and nitrate,	47·2

There are other plots on which a higher percentage of large tubers was obtained than on the three here noted, but on all of them potash in some form was applied. On plot 33, which received a double dose of sulphate of potash, 77 per cent. of the crop was composed of large tubers. Plot 34, which received a double dose of muriate of potash, had only 70 per cent. of large tubers; but that plot is one in which the amount of residual fertility was far below average, so that the deficiency of the crop was probably due to the want of the other manurial ingredients.

The general results of the experiments with the potato crop at Harelaw may be summed up as follows:—

Unmanured Section—Residual Fertility.

Insoluble phosphates have left a larger available residue than soluble phosphates.

The insoluble phosphate that has produced the greatest amount of residual fertility is bone meal.

As a rule, the phosphates which have hitherto been most productive have left the least residue.

Nitrate of soda, when applied alone, exhausts the land very rapidly.

Nitrate of soda, when applied along with other manures, exhausts the land more than other nitrogenous manures.

Sulphate of ammonia has left a considerable residue, or has at least not exhausted the land so much as nitrate of soda.

Horn dust and dried blood have left no more for the potato crop than sulphate of ammonia.

Rape dust has left a larger residue than the other nitrogenous manures.

Both sulphate and muriate of potash have left a residue for the potato crop, but the muriate has left rather more than the sulphate.

Peruvian guano has left the land in better condition for the growth of potatoes than either Ichaboe or fish guano.

Low class has left more residue than high class superphosphate.

Manured Section—Immediate Fertility.

Ground phosphates, when ground as finely as to pass through a sieve of 120 wires to the linear inch, scarcely differ from each other in efficacy. They have produced nearly as good results as dissolved phosphates, and they are probably more economical.

They are more active than bone meal or pure dissolved bones.

Sulphate of ammonia produces a larger crop than nitrate of soda when no dung is used for the crop.

Horn dust and dried blood are not sufficiently active manures for the potato crop when applied with the seed.

Potash salts are of great importance to the potato crop, and there is little difference between the sulphate and the muriate.

An ordinary superphosphate, with about 28 per cent. soluble phosphate, is better than any other.

When the potato crop is insufficiently manured, not only is the produce less, but it contains a smaller proportion of large tubers.

The manurial ingredient which is of most importance for the production of large tubers is potash.

The proportions in which the important manurial ingredients should exist in a well-balanced manure for raising a potato crop without dung, are just about equal parts potash, ammonia, and phosphoric acid. When applied along with dung the potash may be diminished by half.

TABLE I.—POTATO CROP (HARELAW), 1886.—*Manures in lbs. per Half Rod.* 227

No. of Plot.	Bone Ash, 66%.	Bone Ash, dissolved.	Coprolites, 60%.	Coprolites, dissolved.	Bone Meal, 80% 43%.	Bone Meal, dissolved.	Phosphatic Guano, 66%.	Phosphatic Guano, dissolved.	Mineral Phosphate (Beaufort), 60%.	Mineral Phosphate, dissolved.	Horn Dust, 163%.	Dried Blood, 18%.	Peruvian Guano, 74% am., 82% phos.	Fish Guano.	Ichaboe Guano, 138% am., 37% sol., 12% insol.	Fish Compound.	Superphosphate, 44%.	Nitrate of Soda, 95%.	Sulphate of Ammonia, 24% am.	Sulphate of Potash, 80%.	Muriate of Potash, 70%.	Nitrate of Potash, 15% am., 17% Pot.	Rape Dust, 43%.	Supersulphate of Lime.
1.	50	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	35	...	15	9	...	...	...
2.	...	126	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	35	...	15	9	...	...	...
3.	65	...	...	...	...	...	...	...	...	...	...	...	...	...	...	35	...	15	9	...	...	...
4.	112	...	...	...	...	...	...	...	...	...	...	...	...	...	35	...	15	9	...	...	...
5.	65	...	...	...	...	...	...	...	...	...	...	...	...	20	...	15	9	...	...	...
6.	96	...	...	...	...	...	...	...	...	...	...	...	23	...	15	9	...	...	...
7.	58	...	...	...	...	...	...	...	...	...	...	35	...	15	9	...	...	...
8.	73	...	...	...	...	...	...	...	...	...	35	...	15	9	...	...	...
9.	65	...	...	...	...	...	...	...	...	35	...	15	9	...	...	...
10.	112	...	...	...	...	...	...	...	35	...	15	9	...	...	...
11.	35	...	15	9	...	...	...
12.	50	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13.	...	126	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	35	...	15	9	...	...	...
14.	...	126	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	27	15	9	...	...	...
15.	...	126	...	...	...	...	...	...	...	...	42	...	...	...	...	...	...	...	...	15	9	...	...	...
16.	...	126	...	...	...	...	...	...	...	...	...	64	...	...	...	...	...	...	...	15	9	...	...	...
17.	...	126	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	16	9	...	...	...
18.	35	...	...	...	...	...	...
19.	...	126	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	35	...	30	...	...	...	...
20.	...	126	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	35	...	...	18	...	...	...
21.	...	126	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	35	...	...	...	...	...	...
22.	15	9	...	...	...
23.	5	...	...	...	30	...	...	...	...	...	...	19	...	...	...	...
24.	28	...	...	...	30	...	...	...	...	...	30	...	...	...	...
25.	30	32	...	...	...	...	56	...	...	...	...	27	...	...	...	...
26.	28	...	...	...	...	30	...	...	...	...	30	...	...	...	...
27.
28.	10	...	27	...	18	...	...	...
29.	30	...	27	...	18	...	...	...
30.	62	...	27	...	18	...	...	...
31.	...	126	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	70	...	15	9	...	...	...
32.	...	126	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	84	15	9	...	...	...
33.	...	126	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	38	...	60	...	...	...	...
34.	...	126	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	38	...	88	...	...	...	...
35.	...	126	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	15	9	...	150	...	...
36.	...	126	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	40	...	...	...
37.	85	...	...	...	...	...	...	...	...
38.	65	...	...	...	...	...	...	...	...	...	...	...	...	...	...	35	...	15	9	...	...	112

TABLE II.—POTATO CROP (HARELAW), 1886.—*Unmanured.*

No. of Plot.	Manures whose residual Values are to be compared.	Per Half-Rood Plot.						Per Acre.	
		Large.		Medium.		Small.		Total.	
	<i>Phosphatic Manures.</i>	cwt. qrs. lbs.		cwt. qrs. lbs.		cwt. qrs. lbs.		tons. cwt. lbs.	
1	Bone ash, . . .	6 1 10		2 3 18		1 2 14		4 7 0	
2	Do, dissolved, .	6 1 24		2 3 14		1 0 7		4 3 21	
3	Coprolites, . . .	6 0 18		2 2 14		1 0 11		3 19 32	
4	Do, dissolved, .	6 1 24		2 3 24		1 2 10		1 8 16	
5	Bone meal, . . .	7 0 16		2 3 12		1 1 17		1 11 18	
6	Do., dissolved, .	6 3 0		2 2 24		1 0 21		4 5 101	
7	Phosphatic guano, .	6 0 14		2 2 14		1 0 0		3 18 0	
8	Do., dissolved, .	6 1 21		1 3 15		1 0 0		3 11 20	
9	Ground mineral, .	6 1 4		2 0 0		0 3 25		3 14 8	
10	Do., dissolved, .	6 0 0		2 0 0		1 0 0		3 13 0	
11	No phosphate, . .	4 2 0		1 3 21		1 0 21		3 1 21	
12	Bone ash alone, . .	1 3 0		1 2 7		1 1 0		1 16 56	
	<i>Nitrogenous Manures.</i>								
13	Nitrate of soda, . .	7 2 7		2 0 0		1 0 0		4 4 56	
14	Sulphate of ammonia, .	8 1 0		2 1 7		1 1 0		4 11 56	
15	Horn dust, . . .	8 0 14		2 0 21		1 0 24		4 12 21	
16	Dried blood, . . .	5 2 7		2 0 14		1 0 14		4 15 24	
17	No nitrogen, . . .	9 0 2		2 0 21		1 1 0		4 9 72	
18	Nitrate of soda alone, .	3 1 24		2 0 0		1 3 0		2 17 80	
	<i>Potassic Manures.</i>								
19	Sulphate of potash, . .	6 3 0		1 3 21		1 1 7		4 0 0	
20	Muriate of potash, . .	10 0 10		2 1 0		1 1 7		5 9 21	
21	No potash, . . .	4 3 0		2 1 4		1 0 25		3 6 8	
22	Potash salts alone, . .	10 0 14		2 2 14		1 0 21		5 11 56	
	<i>Guanos.</i>								
23	Peruvian guano, . .	7 1 7		2 2 18		1 2 0		4 11 84	
24	Fish guano, . . .	5 3 0		2 2 7		1 1 7		3 17 0	
25	Ichaboe guano, . .	5 0 24		2 2 12		1 1 11		3 13 61	
26	...	3 0 7		2 0 17		1 0 0		2 9 0	
27	Unmanured since 1878, .	3 0 0		2 1 7		1 1 0		2 13 101	
	<i>Superphosphates.</i>								
28	Superphos., 10 % sol., .	8 1 24		2 2 0		0 3 12		4 11 62	
29	Superphos., 25 % sol., .	8 0 14		2 2 14		0 3 7		1 12 56	
30	Superphos., 40 % sol., .	7 2 7		2 1 4		0 3 0		1 6 21	
31	Plot 1, but $\frac{1}{2}$ manure, .	5 1 20		2 1 0		1 0 0		3 9 18	
32	Plot 2, but $\frac{1}{2}$ manure, .	5 3 0		2 0 16		0 3 4		3 9 52	
33	Plot 14, but $\frac{1}{2}$ manure, .	5 3 0		2 0 0		0 3 0		3 8 0	
34	Plot 19, but $\frac{1}{2}$ manure, .	3 1 21		1 3 14		1 1 0		2 12 56	
35	Rape dust, . . .	8 1 10		2 2 0		1 1 24		4 18 48	
36	...	4 1 11		1 3 24		1 1 14		3 1 56	
37	...	2 1 0		1 2 14		1 0 14		2 0 0	
38	Same as plot 7, with 8 cwt. per ac. supersulp. of lime,	5 3 0		2 1 7		1 1 24		3 16 24	

TABLE III.—POTATO CROP (HARELAW), 1886.—*Manured.*

No. of Plot.	Manures whose immediate Effects are to be compared.	Per Half-Rood Plot.									Per Acre.		
		Large.			Medium.			Small.			Total.		
	<i>Phosphatic Manures.</i>	cwt.	qrs.	lbs.	cwt.	qrs.	lbs.	cwt.	qrs.	lbs.	tons.	cwt.	lbs.
1	Bone ash,	9	1	0	2	2	21	2	0	0	5	11	56
2	Do., dissolved, . .	10	3	0	2	3	0	1	0	7	5	7	64
3	Coprolites,	11	1	7	2	3	7	1	0	7	6	1	56
4	Do., dissolved, . .	11	2	6	3	0	4	1	0	14	6	5	59
5	Bone meal,	11	0	7	2	3	14	0	3	14	5	18	54
6	Do., dissolved, . .	11	0	18	2	3	0	1	0	7	5	11	0
7	Phosphatic guano, . .	12	1	0	2	1	14	0	3	0	6	3	0
8	Do., dissolved, . .	12	0	21	1	3	14	1	0	0	6	0	56
9	Ground mineral, . .	10	3	11	1	3	0	0	3	7	5	9	32
10	Do., dissolved, . .	12	3	0	2	1	24	1	1	0	6	11	80
11	No phosphate, . . .	9	1	14	2	0	10	0	3	14	4	10	10
12	Bone ash alone, . . .	3	1	4	1	1	21	0	3	14	2	11	101
	<i>Nitrogenous Manures.</i>												
13	Nitrate of soda, . . .	11	3	16	2	1	11	1	1	0	6	1	12
14	Sulphate of ammonia, .	13	1	14	2	3	11	1	2	14	7	3	0
15	Horn dust,	10	0	5	3	1	14	1	0	21	5	15	84
16	Dried blood,	11	1	14	1	1	23	1	0	25	5	12	10
17	No nitrogen,	8	1	17	1	3	24	0	3	4	4	9	24
18	Nitrate of soda alone, .	5	0	23	2	1	11	1	0	6	3	8	06
	<i>Potassic Manures.</i>												
19	Sulphate of potash, . .	13	1	2	3	0	14	1	1	14	7	2	16
20	Muriate of potash, . .	13	1	19	3	1	16	1	1	11	7	3	32
21	No potash,	3	2	14	2	2	11	1	1	24	3	1	56
22	Potash salts alone, . .	9	0	16	2	2	10	1	0	9	5	2	48
	<i>Guanos.</i>												
23	Peruvian guano, . . .	11	0	0	3	1	7	1	3	0	6	7	68
24	Fish guano,	9	1	26	2	0	21	1	1	26	5	5	21
25	Ichaboe guano, . . .	9	0	0	2	3	0	2	0	0	5	10	0
26	Sulph. of pot., double, .	8	0	0	2	3	14	1	3	11	5	2	0
27	Unmanured since 1878, .	2	3	0	2	2	10	1	1	7	2	13	24
	<i>Superphosphates.</i>												
28	10 per cent. soluble, .	10	2	1	2	2	21	1	2	7	5	18	32
29	25 per cent. soluble, .	10	0	11	3	0	10	1	3	14	6	0	80
30	40 per cent. soluble, .	9	1	18	3	1	7	2	1	0	5	10	88
	<i>Quantities.</i>												
31	Nitrate of soda, double quantity,	12	3	0	3	1	18	1	2	0	7	1	32
32	Sulphate of ammonia, double quantity,	14	3	10	3	1	18	1	3	10	8	0	88
33	Sulphate of potash, double quantity,	12	1	24	2	2	0	1	0	21	6	9	24
34	Muriate of potash, double quantity,	10	2	4	3	3	0	1	3	0	6	0	40
35	Rape dust,	12	0	0	3	1	24	1	2	11	6	16	56
36	Nitrate of potash, . . .	7	2	22	2	0	7	1	0	25	4	8	50
37	Fish compound,	5	0	0	3	2	14	1	0	21	3	18	56
38	Supersulphate of lime, .	9	0	0	2	3	0	1	2	8	5	6	24

TABLE IV.—POTATO CROP (HARELAW), 1886.—*Unmanured.*

No. of Plot.	Manures whose residual Values are to be compared.	Total Crop.	Percentage of			Increase per Acre over Unmanured Plot No. 27.
		Lbs. per Acre.	Large.	Medium.	Small.	
<i>Phosphatic Manures.</i>						
1	Bone ash, . . .	9,744	58.3	26.8	14.9	3704
2	Do., dissolved, .	9,320	62.1	27.6	10.3	3280
3	Coprolites, . .	8,880	62.2	26.5	11.3	2840
4	Do., dissolved, .	9,872	58.7	26.9	14.4	3832
5	Bone meal, . . .	10,210	62.7	25.1	12.2	4170
6	Do., dissolved, .	9,624	62.8	26.1	11.1	3384
7	Phosphatic guano, .	8,786	62.8	26.0	10.8	2696
8	Do., dissolved, .	8,032	67.8	21.0	11.2	1992
9	Ground mineral, .	8,296	67.9	21.6	10.5	2256
10	Do., dissolved, .	8,064	66.7	22.2	11.1	2024
11	No phosphate, . .	6,856	58.8	25.7	15.5	816
12	Bone ash alone, .	4,088	38.4	34.2	27.1	...
<i>Nitrogenous Manures.</i>						
13	Nitrate of soda, .	9,464	71.6	18.9	9.5	3424
14	Sulphate of ammonia, .	10,584	69.8	19.6	10.6	4544
15	Horn dust, . . .	10,328	70.5	19.0	10.5	4288
16	Dried blood, . . .	10,584	72.5	18.1	9.4	4544
17	No nitrogen, . . .	11,160	72.4	17.6	10.0	5120
18	Nitrate of soda alone, .	6,464	48.0	27.7	24.3	424
<i>Potassic Manures.</i>						
19	Sulphate of potash, .	8,960	67.6	19.4	13.1	2920
20	Muriate of potash, .	12,232	73.9	16.6	9.6	6292
21	No potash, . . .	7,400	57.5	27.7	14.8	1360
22	Potash salts alone, .	12,488	72.6	18.9	8.5	6118
<i>Guanos.</i>						
23	Peruvian guano, . .	10,280	63.7	22.2	13.1	4240
24	Fish guano, . . .	8,624	59.8	26.6	13.6	3584
25	Ichaboe guano, . .	8,240	56.7	15.0	28.8	2300
26	...	5,488	50.5	35.7	13.8	...
27	Unmanured since 1878, .	6,040	48.8	35.5	15.7	...
<i>Superphosphates.</i>						
28	10 per cent. soluble, .	10,592	71.6	21.1	7.3	4592
29	25 per cent. soluble, .	10,360	70.3	22.7	7.0	4320
30	40 per cent. soluble, .	9,656	70.2	22.9	6.9	3616
<i>Quantities.</i>						
31	Plot 1, $\frac{1}{2}$ manure, . .	7,776	62.6	25.9	11.5	1736
32	Plot 2, $\frac{1}{2}$ manure, . .	7,780	66.2	24.7	9.1	1740
33	Plot 14, $\frac{1}{2}$ manure, . .	7,616	67.7	23.5	8.8	1676
34	Plot 19, $\frac{1}{2}$ manure, . .	5,880	52.4	28.5	19.1	...
35	Rape dust, . . .	11,024	67.8	20.3	11.9	4984
36	...	6,888	56.6	25.5	17.9	846
37	...	4,480	45.0	32.5	22.5	...
38	Same as plot 7, with 8 cwt. per ac. super-sulphate of lime, .	8,536	60.3	24.3	15.4	2496
	Average, . . .	...	62.4	24.2	13.1	

TABLE V.—POTATO CROP (HARELAW), 1886.—*Manured.*

No. of Plot.	Manures whose immediate Effects are to be compared.	Total Crop.	Percentage of			Increase over un-manured half of Plot.
		Lbs. per Acre.	Large.	Medium.	Small.	
<i>Phosphatic Manures.</i>						
1	Bone ash, . . .	12,488	66.4	19.3	14.3	2744
2	Do, dissolved, . .	12,048	71.6	20.4	8.0	2728
3	Coprolites, . . .	12,608	74.5	18.5	7.0	4728
4	Do., dissolved, . .	14,080	73.5	19.2	7.3	4208
5	Bone meal, . . .	12,272	74.7	19.4	5.9	3062
6	Do., dissolved, . .	12,768	78.3	14.2	7.5	3144
7	Phosphatic guano, .	12,776	79.7	15.4	4.9	5040
8	Do., dissolved, . .	12,496	80.9	12.5	6.6	5464
9	Ground mineral, . .	12,240	79.4	14.7	5.9	3944
10	Do., dissolved, . .	14,752	77.4	15.0	7.6	6688
11	No phosphate, . . .	11,128	75.5	17.5	7.0	4272
12	Bone ash alone, . .	5,816	64.4	22.1	13.5	1728
<i>Nitrogenous Manures.</i>						
13	Nitrate of soda, . .	12,904	76.6	15.3	8.1	4440
14	Sulphate of ammonia, .	16,016	74.8	16.1	9.1	5432
15	Horn dust, . . .	12,961	69.4	22.4	8.2	2636
16	Dried blood, . . .	12,581	81.0	10.3	8.7	2000
17	No nitrogen, . . .	9,902	75.3	17.6	7.1	...
18	Nitrate of soda alone, .	7,712	60.5	27.3	12.2	1248
<i>Potassic Manures.</i>						
19	Sulphate of potash, . .	15,920	74.7	17.6	7.7	6960
20	Muriate of potash, . .	16,048	74.9	17.6	7.5	3816
21	No potash, . . .	6,988	47.2	33.8	19.0	...
22	Potash salts alone, . .	11,472	71.4	20.2	8.4	...
<i>Guanos.</i>						
23	Peruvian guano, . .	14,392	68.5	20.6	10.9	4112
24	Fish guano, . . .	11,781	72.1	16.6	11.3	3160
25	Ichaboo guano, . .	12,320	65.4	20.1	14.5	4080
26	Sulph. of pot., double, .	11,421	62.7	14.7	22.6	5936
27	Unmanured since 1878, .	5,960	41.3	38.9	19.8	...
<i>Superphosphates.</i>						
28	Superphos., 10 % sol., .	12,248	71.3	18.2	10.5	2656
29	Superphos., 25 % sol., .	12,520	67.1	20.5	12.4	3160
30	Superphos., 40 % sol., .	12,416	62.3	22.1	15.1	3760
<i>Double Quantities.</i>						
31	Nitrate of soda, . .	15,824	72.2	19.3	8.5	8048
32	Sulphate of ammonia, .	18,000	73.9	17.0	9.1	1020
33	Sulphate of potash, . .	14,472	77.0	15.5	7.8	6856
34	Muriate of potash, . .	12,480	70.0	18.8	11.7	7600
35	Rape dust, . . .	12,288	70.3	20.3	9.4	4994
36	Nitrate of potash, . .	9,840	70.1	18.8	11.1	2952
37	Fish compound, . . .	8,792	51.0	36.9	12.1	4312
38	Supersulphate of lime, .	11,896	67.3	20.7	11.5	3360
	Average, . . .	...	71.0	19.0	10.0	

TABLE VI.—AMOUNT OF GRAIN ON PHOSPHATE PLOTS FROM 1881 to 1885.
Lbs. per Acre.

	Bone Ash	Coprolites	Bone Meal	Phosphatic Guano.	Mineral Phos
<i>Undissolved Phosphates.</i>					
No. of Plot,	1	3.	5.	7.	9.
1881, Oats, . . .	2,764	2,551	3,438	3,366	3,458
1883, Barley, . . .	3,657	3,840	3,486	3,677	3,710
1884, Oats (unmanured), .	2,390	2,754	2,358	2,601	2,281
1885, Oats, . . .	2,797	2,761	2,599	2,967	1,572
	Estimated loss by disease in 1885,			.	800
Total, .	11,608	11,906	11,881	12,611	11,851
1886, Potatoes, . .	9,744	8,880	10,210	8,736	8,296
<i>Dissolved Phosphates.</i>					
No. of Plot,	2.	4.	6.	8.	10
1881, Oats, . . .	3,676	3,664	3,652	3,248	3,708
1883, Barley, . . .	3,867	3,790	3,535	3,944	3,758
1884, Oats (unmanured), .	2,612	2,427	2,401	2,471	2,352
1885, Oats, . . .	3,010	2,527	2,679	2,079	2,391
	Estimated loss by disease in 1885,			150	.
Total, .	13,165	12,708	12,270	12,192	12,212
1886, Potatoes, . .	9,320	9,872	9,624	8,032	8,064

II. MANURIAL EXPERIMENT WITH POTATOES AT HARELAW.

During the summer of 1881, when the station at Harelaw was under oats, I made use of an unoccupied part of the ground to try a manurial experiment with potatoes on a small scale. The ground was uniform in character, and the manures were applied with rigid accuracy. The chief objects of the experiment were to test the relative merits of nitrate of soda and sulphate of ammonia with and without dung, and also to test the relative merits of muriate and sulphate of potash in similar circumstances. There were twelve plots, six without dung and six with it. Each plot measured one 80th acre, and the results are given in the following table:—

	Nitrate of Soda,			Sulphate of Ammonia.		
	Muriate of Potash.	Sulphate of Potash.	No Potash.	Muriate of Potash.	Sulphate of Potash.	No Potash.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
SECTION I.— <i>Without Dung.</i>						
Large potatoes, . . .	138	147	148	143	198	179
Small potatoes, . . .	67	54	38	129	97	98
Total,	205	201	186	272	295	277
SECTION II.— <i>With Dung.</i>						
Large potatoes, . . .	191	177	175	150	124	167
Small potatoes, . . .	60	56	52	93	82	68
Total,	251	233	227	243	206	235

There are some indications conveyed by these results which we are able to appreciate this year, now that we have before us the results of the potato crop on the rest of the station.

In the first place, it is seen that in Section I. the sulphate of ammonia has produced a larger crop than the nitrate of soda; and in this respect the little experiment is confirmed by the results of the rood plots 13 and 14 this year (see page 222), but on the dunged portion, Section II., we have an entirely opposite result.

We have no experiments on a large scale upon dunged land, but a large series of experiments carried out by Professor Maercker of Halle (*Landwirthschaftliche Jahrbücher*, 1880), show very clearly that the information yielded by Section II. of this little experiment is quite reliable. The total results contained in the table are as follows:—

	Nitrate of Soda.	Sulphate of Ammonia.
	lbs.	lbs.
SECTION I.— <i>Not Dunged.</i>		
Large potatoes,	433	520
Small potatoes,	150	324
Total,	592	844
Percentage of large tubers,	73	61½
SECTION II.— <i>Dunged.</i>		
Large potatoes,	543	441
Small potatoes,	168	243
Total,	711	684
Percentage of large tubers,	76½	67½

So far as the bulk of the crop is concerned, the sulphate of ammonia on Section I. has produced half as much again as the nitrate of soda, viz., 844 lbs., as against 592 lbs.; but if we regard the quality of the crop, as shown by the percentage of large tubers, we see that the increase of the crop, caused by the sulphate of ammonia, is attained at the expense of quality. The tendency of sulphate of ammonia to favour the production of small potatoes is borne out by the results obtained on the rood plots this year, but the disparity of the two manures in this respect, is not so great as is shown in this small experiment.

On Section II. it is shown that, while the nitrate of soda on the dunged land has given a large increase of total crop over the undunged section, it has caused almost no increase in the amount of small potatoes, so that the proportion of large potatoes is increased from 73 to 76½ per cent. The quantity of potatoes produced by the sulphate of ammonia along with the dung is a little more than that produced by the nitrate of soda without dung, but the proportion of small tubers is much greater, viz., 32½, as against 27 per cent.

The effect of the dung has been to increase the proportion of large tubers.

We therefore see that, in manuring potatoes without dung, the sulphate of ammonia has produced a larger crop than the nitrate of soda, but an undue proportion of that increase is in the form of small tubers; while in manuring potatoes along with dung, nitrate of soda has produced a larger crop than

sulphate of ammonia, and not only so, but the crop is of better quality, in so far as it contains a greater proportion of large tubers. The superiority of sulphate of ammonia over nitrate of soda on undunged land is far more marked in this experiment than in those of Professor Macreker, and though I was at a loss to explain this superiority at the time, there is no difficulty in explaining it now that we have before us the results of other five years' experience in the use of these manures. Always in comparing the effects of these two manures, we must clearly have in view their specific characters, as explained in the former volume of the *Transactions* (vol. xviii. pp. 356-359), where a summary is given of the conclusions derived from the experiments on the Society's stations. It is shown there that the relative efficacy of these two manures depends on two things—the length of time during which the crop continues growing and the amount of moisture. In this case we have a crop which has a prolonged period of growth, and the season was a very wet one, so that the conditions were precisely those which give sulphate of ammonia an advantage over nitrate of soda.

The oat crop grown on the rest of the station that year made a better use of the nitrate of soda than did the potato crop, for two reasons—first, because it had a shorter period of growth, so that the more active manures did more for the crop than the slow ones; and second, because its roots went more deeply into the soil, and were thus able to recover nitrates which had been washed down too far to be taken up by the roots of the potato plant.

As regards the effects of potash manures, the evidence provided by these experiments is not very decisive. There was evidently no want of potash in the soil, so that the plots which got no potash are not very far behind the others. The muriate has, upon the whole, produced a larger crop than the sulphate of potash, and the latter has produced more than the "no potash" plots.

The total results as regards potash are—

	Muriate of Potash.	Sulphate of Potash.	No Potash.
Large Potatoes, . . .	622	645	669
Small „ . . .	349	289	256
Total, . . .	971	934	925
Percentage of large tubers,	64	69	72

The advantage of the muriate over the sulphate, and the advantage of the sulphate over the "no potash" plots, are thus seen to be exceedingly small, and these advantages are more than counterbalanced by the accompanying decrease in the proportion of large tubers.

On the large plots of the station this year it has been shown (p. 223) that there was no difference of any moment between the muriate and the sulphate, but the slight differences which did exist are quite in accordance with the above results.

In the ordinary course of agriculture, where land is regularly dunged, there is not so much need of potash manures for the growth of potatoes, because dung, unless very badly kept, is rich in potash; but where light manures only are used, it has been shown, in the report on the rood plots of the station, how important a constituent potash is for the raising of a potato crop. On the plots which had been unduly deprived of potash salts, the crop was a signal failure, and the want of that constituent made itself more sharply manifest than in the case of most other crops, for the potato is a feebly rooting plant, which lives on the surface of the soil, and is incapable of going far in search of the mineral food it requires. Elaborate experiments, made at the experimental stations in Germany, have shown that the various elements of plant food have special functions to perform, and that, as regards potash, it is found to accompany the carbohydrates of the plant, and that it is therefore largely concerned in the production of starch. We must therefore expect that the potato, which contains such an enormous quantity of starch, should show itself very sensitive to the want of potash in the soil.

We may therefore sum up the lessons taught by this little experiment in a few sentences.

1. The potato is a feebly rooting plant, requiring that its nourishment should be placed within easy reach.

2. It has a prolonged period of growth, and is therefore able to utilise slowly-acting manures to a greater degree than cereals do.

3. Dung, which consists in great measure of slowly-acting manurial matter, and which lies closely in contact with the seed, is a most appropriate manure for potatoes.

4. The effect of dung is to produce a crop with a relatively large proportion of large tubers.

5. When no dung is used, sulphate of ammonia is a better manure than nitrate of soda, especially in a wet season.

6. Nitrate of soda is a better manure than sulphate of ammonia when applied on the top of dung.

7. When sulphate of ammonia is applied on the top of dung, it not only produces a smaller crop than nitrate of soda, but it favours the production of a larger proportion of small potatoes.

8. Potash salts are of great importance for the growth of potatoes, but where much dung is used the supply of potash in the soil may be sufficient for the wants of the crop.

9. It matters very little whether potash is supplied in the form of muriate or sulphate; the former may produce a larger crop, but the increase may be more than counterbalanced by the excess in proportion of small potatoes.

III. TURNIP CROP, PUMPHERSTON, 1886.

Since the year 1878 the station at Pumpherston has been manured every year except one—that was in 1880, when the field was under grass. The system of manuring was such as to provide each fully-manured plot with 40 lbs. phosphoric acid, 30 lbs. potash, and 20 lbs. of nitrogen during three of the years when green crops were grown, and half these quantities during four of the years when the station was under white crops. Taking an average of the eight years, the amounts of these substances per annum applied to each fully-manured rood plot were 25 lbs. of phosphoric acid, $18\frac{1}{2}$ lbs. potash, and $12\frac{1}{2}$ lbs. of nitrogen; or, in other words, an ordinary plot would receive an amount of manure somewhat of the following kind per acre:—From 6 to 8 cwt. superphosphates, about 2 cwt. sulphate of potash, and about $2\frac{1}{2}$ cwt. nitrate of soda. That is a very liberal manuring, but it must be remembered that no dung has been applied to the land all these years, and that nothing has been fed on the land. On many of the plots large crops were grown, on others very small ones; but on the fully-manured plots the average crop was rather more than the average of what such land is capable of producing under ordinary conditions of farming. An accurate debit and credit account of each plot has been kept, but it is sufficient to take a general view of matters, as the experiments have another year to run.

The object of this year's experiments was to see how much of the manures applied in former years was still lying in the soil and available for the growth of crops. The turnip crop was chosen as the crop for the year, not because of its special fitness for testing the residual fertility in the soil, but because in growing a turnip crop we were adhering to the rotation that we have been following all along, viz., turnips, barley, grass or leguminous crop, and oats.

On all those plots which had hitherto received a full manuring no manure whatever was applied this year. On plots from which one of the three manurial constituents had hitherto been withheld, that constituent was applied this year for the first time, and it was applied in the quantity mentioned above as

characterising a full manuring. The object of applying that hitherto denied constituent was to enable the other constituents that had been applied in former years to exert their influence on the crop; for it is well known, and it has been abundantly proved in these experiments, that the deficiency of one essential constituent in the soil prevents the others, that may be there in abundance, from coming into operation. Similarly, when from any plot two manurial constituents had been hitherto withheld, both these were put on this year, in order to find how much of the third constituent was present in the soil, and capable of contributing to the growth of the turnip crop. To two other plots, which had hitherto been regularly cropped without any manure, an ordinary full dose of manure was for the first time applied. On the table are given the kind and quantities of the manures formerly applied, and the manure applied this year, along with the amounts per acre of the crop gathered.

Upon the whole, the season in the district was a favourable one for turnip growing, and the following is the record of the rainfall :—

June,	.	.	.	.	.	2.08	inches.
July,	.	.	.	.	.	1.00	"
August,	.	.	.	.	.	4.00	"
September,	.	.	.	.	.	3.00	"
Total,						10.00	"

Owing to the drought in June and July, it was not a season when light manures are used to best advantage; for though it was not altogether a dry season, yet such rain as did fall came in deluging showers at rare intervals, and caused a good deal of flooding down the furrows. The top of the land was thus beaten down, and when the drought succeeded, the surface of the land was covered over with a hard bark, which retarded the crop considerably. I am informed by Mr Tod that the turnip crop in the district, raised with dung and artificials in the usual way, was a good one, rather above than below average, and that on land similar to that of the station there was nothing to complain of, except that here and there, owing to drought, some fields braided very unevenly. It is probable that, with a season more favourable to the use of light manures, the crop might have been about a third more; but in the case of severe drought, it would have been much worse. We may perhaps regard the external conditions as rather less favourable than the average of what may occur in the varying conditions of turnip growing.

TURNIP CROP (PUMPFERSTON), 1886.

No. of Plot.	Manures applied prior to 1886 but withheld in 1886.	Total crop, 1886, per acre.	Excess over plot 27.	Total crop, 1887, per acre.	Deficiency of Crop 1886.	Manures applied in 1886.
		cwt.	cwt.	cwt.	cwt.	
Phosphate Plots—						
1	Bone ash,	155	47	323	163	With nitrate of soda and potash salts,
2	Do. dissolved,	150	42	340	190	
3	Ground coprolites,	135	27	302	167	
4	Do. dissolved,	134	26	351	217	
5	Bone meal,	179	71	286	117	
6	Do. dissolved,	151	73	334	133	
7	Phosphatic guano,	164	56	330	166	
8	Do. do. dissolved,	180	82	367	177	
9	Ground Charleston phos.,	128	20	268	140	
10	Do. do. dissolved,	179	71	360	181	
11	No phosphates,	160	52	168	8	Superphos. Sulph. of potash, Nitrate of soda.
12	Bone ash alone,	213	105	195	.. (Ex. 18).	
Nitrogen Plots—						
13	Nitrate of soda,	180	73	311	171	With superphosphate and potash salts,
14	Sulphate of ammonia,	126	14	289	163	
15	Iron dust,	163	55	244	81	
16	Dried blood,	190	62	256	66	
17	No nitrogen,	205	97	142	.. (Ex. 63).	Nitrate of soda. Superphos., Sulph. of potash.
18	Nitrate of soda alone,	151	43	282	131	
Potash Plots—						
19	Sulphate of potash,	159	51	318	179	With superphos. and nitrate of soda,
20	Muriate of potash,	106	..	291	185	
21	No potash,	141	33	259	97	Sulph. of potash. Superphos., Nitrate of soda.
22	Potash salts alone,	110	32	134	.. (Ex. 6).	
Guano, &c.—						
23	Peruvian guano,	136	28	203	167	Sulph. of potash. Do. Do.
24	Fish do.,	104	..	206	94	
25	Ichaboe do.,	180	22	237	107	
27	Unmanured, continuously,	108	..	175	67	
Superphosphates—						
28	10% Soluble phosphate,	112	4	273	161	With nitrate of soda and potash salts,
29	25% Do. do.,	163	55	310	156	
30	40% Do. do.,	109	1	242	138	
31	Duplicate of Plot 1,	155	48	266	110	
32	Do. do. 2,	142	34	315	178	Rape dust, with superph. and potash salts, Same as 7, along with supersulphate,
33		192	84	224	32	
38		256	148	466	200	
39	Unmanured, continuously,	302	184	179	.. (Ex. 123).	Super, Nitr. of soda, and Sulph. of potash.

The quantity of roots taken from the various plots is given in the first column of the table in cwts. per acre, and the first thing which strikes one on examining these figures, is that the crop, where no manures were applied, besides being a very poor one, is on the whole a very even one. There are not to be seen the great diversities noticed in former years, and it is evident that the effect of withholding manures even for a single season, is not only to lower the amount of the crop very considerably, but also to obliterate to a great extent the well-marked distinctions that have hitherto formed such a striking feature of the station.

Take, for example, the first ten plots, where the various forms of phosphates are applied.

PHOSPHATE PLOTS, 1886.

No. of Plot.	Manures.	Cwt. per acre.	
		Undissolved	Dissolved.
1-2	Bone ash,	155	150
3-4	Coprolites,	135	134
5-6	Bone meal,	179	181
7-8	Phosphatic guano,	164	190
9-10	Mineral phosphates,	128	179
	Average,	152	167

There is still a difference in favour of the dissolved phosphate, but instead of its being from 15 to 20 per cent. on the average result, it is now reduced to something under 11 per cent., and even this superiority is due to what may be regarded as the exceptional results obtained on plots 8 and 10. That exception is able to be explained by the fact that the soil in these two plots was found to be somewhat damper than the others, so that the young plants got a better start. On the first six plots the marked differences noticed in former years have entirely disappeared.

We may now proceed to examine the various plots in detail, and see what information they convey. First, as regards phosphatic manures, we find that the experiments here and those at Harelaw agree in showing that *bone meal* has left a larger amount of phosphate available for the turnip crop than has any other of the insoluble phosphates; next to it is phosphatic guano, and then bone ash. The superiority of bone meal over other forms of phosphatic manure, as regards what might be called its staying power, is no doubt due to the nitro-

genous matter it contains. When bone meal rots in the soil, it rots as a whole; it does not part with its nitrogenous matter much quicker than with its phosphates, so that even after bones have been in the earth for years, they still contain more than half the proportion of nitrogenous matter of fresh bones. Thus the residual fertility from bones is largely nitrogenous fertility. The other phosphates with which bone meal is here compared contained no nitrogenous matter. The nitrogen was always applied with them entirely in the form of nitrate of soda; and as this is a substance which goes quickly out of the soil, there must necessarily be a larger amount of nitrogen to help the residual phosphate on the bone plots, for about two-thirds of their nitrogen consisted of the gelatine of the bones, and only one-third of nitrate of soda. The residue left by the dissolved phosphates is not less than that left by the undissolved ones. In the case of two of them (phosphatic guano and mineral phosphate), the dissolved phosphate seems to have left more for the turnip crop than the undissolved has; and in this respect the Pumpherstons experiments differ from those at Harelaw, but the cause of this discrepancy is no doubt due to the difference of moisture referred to above. This has been noticed on these plots before, though not so prominently as during the present season, but after all the difference is only one of degree. If we compare the crops grown on these plots in former years, we find that plots 7 and 9 have always been inferior to plots 8 and 10; but the inferiority this year is much less than usual, so that the falling away in fertility of the plots on which dissolved phosphate was used is much more rapid (see below) than that on the plots to which ground phosphates were applied; and in this respect the two stations teach the same lesson.

A clearer view of this matter is obtained if we compare the turnip crop of 1882, grown with manures (third column of table), with that of 1886, grown without manures. It is seen that on those plots from which the manures have been withheld this year the present crop is only about half the amount of the former one. Assuming that the two seasons were equally suitable for the growth of turnips, the great drop in the bulk of the crop raised is a very notable fact. Considering the very large doses of manures that have been annually applied to the land, it must be a matter for surprise that the withdrawal of the supply for one year should have had so very pronounced an effect on its fertility; and we cannot help inferring that whatever light manures may accomplish as an adjunct to dung, they seem to have little effect by themselves in maintaining the fertility of the land, and putting it into what is known as "good heart."

With such a system the land is put on short credit; or, in other words, each crop is made to depend for its nourishment to

an extraordinary extent upon the manures immediately applied to it.

The object we had in view in withholding the manures for a year was to determine the amount of residual fertility contributed to the soil by the ordinary light manures in use, and the first answer we receive to our inquiry is that, whatever it is, it is not very much. On the last column is shown the deficiency of the various plots from those of 1882, and if we compare the phosphate plots, the result is as follows :—

DEFICIENCY OF UNMANURED CROP 1886 FROM MANURED CROP 1882.

No. of Plot.	Manures.	Cwt. per Acre.	
		Undissolved.	Dissolved.
1-2	Bone ash, . .	168	190
3-4	Coprolites, . .	167	217
5-6	Bone meal, . .	107	153
7-8	Phosphatic guano, .	166	177
9-10	Mineral Phosphates,	140	181
	Average deficiency,	149	183

There remain two complementary experiments with phosphates on plots 11 and 12. Plot 11 has had no phosphates applied to it for eight years, but the ordinary dose of potash salts and nitrate of soda has been put on annually. This year 6 cwt. of superphosphate was applied, in order to work out any residue left by these manures, but it has failed to raise more crop than the average unmanured phosphate plots, either for the reason that the soil now contains more potash than is favourable for growing a crop, or because the nitrate of soda has not left sufficient residue for the purpose. On plot 12 bone ash has been regularly applied, and there ought to be a considerable available residue now, seeing that there has been very little taken away in the small crops it has hitherto borne. Sulphate of potash and nitrate of soda, each at the rate of 2 cwt. per acre, were applied to call up some of the phosphatic residue, and a crop of fully 10½ tons per acre was obtained. This is a fairly satisfactory return, considering the quantity of nitrate applied, and it is probable that had a double dose of nitrate been given the bone ash would have given a better account of itself.

Among the nitrogenous manures, the largest available residue is contributed by the plot manured with dried blood. This corroborates the results obtained at Harelaw, but the same

cannot be said for the crops on plots 13 and 14. It would seem that the nitrate of soda added in former years has been able to do more for the turnip crop than the sulphate of ammonia. This is an unexpected result, and it is not in harmony with the notes taken, and the anticipations formed, when observations were made during the growth of the crop. Plot 17, which had hitherto received phosphates and potash salts only, had for the first time nitrate of soda given it, and the result is very like that obtained on plot 12, which had hitherto received phosphate alone. The residue left by the potash given to plot 17 has not done much for the crop; but in this case, as in the other, the amount of the crop may have been limited for want of sufficient nitrogenous manure. These plots and plot 22 will receive an extra dose of nitrate for the next crop, in order to determine that point.

Plot 18, which had been regularly manured with nitrate of soda alone, had superphosphate and potash salts applied to it, and has produced as much as the average plots of the phosphate series. Plot 19 (sulphate of potash) has also shown the average deficiency, and plot 20, which received formerly its potash in the form of muriate, has produced the poorest crop on the station. This is a most unexpected result, and it stands in direct opposition to the result at Harelaw with the potato crop. It was very slow in making a braird, and never made up its leeway, on account of the barking of the ground. The great excess of potash salts, which ought to be lying in plot 22, that has all along been manured with these alone, and which has hitherto borne miserable crops, has not done much for the turnip crop, but it must be remembered that the wants of the turnip crop for potash are easily supplied.

Plot 27, which has never been manured from the beginning, and which was left unmanured this year also, has produced about $5\frac{1}{2}$ tons per acre. This plot serves as a measure by which to estimate the value of all the plots in the field. Accordingly, on the second column is given the excess of crop grown on the various plots over that on plot 27.

The plots that have hitherto been fully manured, and whose supply of manure has this year for the first time been cut off, have yielded on an average about 45 cwt. per acre more than the plot that has never been manured, or about one-third more than the unmanured plot.

Considering that the average crop on the station is scarcely half as much as would have been produced if the manures had been applied as usual, we are not far off the mark in reckoning that the unexhausted or residual fertility of the manures applied during seven years is sufficient for the production of about one-seventh of a crop of turnips during the first year thereafter.

During the eight years of the experiments the station was manured seven times, for on the third year a crop of hay was grown without manure. We may regard this crop of hay as an offset against the amount of residual fertility in the soil, due to manure applied before the experiments began, and fairly consider the seventh of a crop of turnips as the first instalment of the manurial fertility left by the manures applied during seven years.

Our experiments have shown that the turnip crop is one which depends for its growth chiefly upon the store of phosphates and nitrogenous matter in the soil, and only to a very limited extent upon the store of potash compounds; and we are, therefore, prepared to find that the addition of sulphate of potash to those plots, which had formerly been deprived of that substance, has had no appreciable effect in increasing the crops, but the case is otherwise with the phosphates and nitrate of soda applied to the plots from which these substances had been withheld. On the last column it will be seen that three of the plots have this year produced a better crop than in 1882, and these are the plots to which nitrate of soda with, or without phosphate, was applied for the first time; and plot 17, which got nitrate alone this year, has given the greatest excess. The smallness of the excess on plot 22 may be due to the disproportionate abundance of potash in that plot.

There remain to be noticed two plots, which have produced the largest crops on the station, viz., plots 38 and 39. Plot 38 has been hitherto manured in the same way as plot 7, with this exception, that there has annually been given in addition a large application (16 cwt. per acre) of a substance called supersulphate of lime, which is gypsum, with sulphuric acid added to it. This plot has produced the second best crop on the station this year. In 1882 it produced by far the largest crop of turnips, and in 1884 it produced the largest crop of beans, but the manure exerted no special effect upon the cereal crops. It is highly probable that its beneficial action is to be ascribed to the lime it contains, for the field has not been limed for many years. The effects of applying lime to land are very various, and while in some cases it has a deleterious effect, there are others in which its action is very beneficial. It is, of course, beneficial when the land is poor in lime, and in that case its application in the form of sulphate, especially on thin land deficient in organic matter, is preferable to employing it in the caustic state. Sulphate of lime is frequently found to produce a very marked effect in the growth of leguminous crops, and in districts where leguminous crops are much grown it is regarded as an indispensable manure. On the Harelaw station, which overlies the limestone rock, its use has been attended with no advantage whatever, and that is

why I am of opinion that the beneficial effect of this manure at Pumpherston is due simply to its being a mild form of liming. The diminution of the crop on this plot is not in greater proportion than that of plot 7, which has had the same manure applied to it without the addition of sulphate of lime. Indeed, it is rather less, so that there is no evidence as yet that the application of the supersulphate has had the effect of impoverishing the land.

The most remarkable and instructive result obtained at Pumpherston this year is that shown in plot 39. This is a plot which, like plot 27, has been cropped without manure since the beginning of the experiments, and which has hitherto borne crops just as poor as it—the poorest on the station. This year, for the first time, it received a general manure of the kind we have been annually applying to the majority of the plots, viz., 6 cwt. superphosphate, 2 cwt. sulphate of potash, and 2 cwt. of nitrate of soda per acre, and the result is that it has produced the largest crop on the station—15 cwt. per acre, which is just about double the average of the other plots.

This is a very noteworthy fact. It was regarded with much surprise by those who inspected the field at the annual demonstration, forming, as it did, such a striking illustration of the small value of light manures as a means of raising the general fertility of the land. It shows us that the residual value of the manures we have been applying is a small matter compared with their prime value, and leads us to think of the proverb, "A bird in the hand is worth two in the bush," for it would seem as if one cwt. of manure in the present year were worth ten cwt. in the past.

But here we must not dogmatise, for the turnip crop, grown on thin land where only light manures have been used, is necessarily a fickle crop, and we must wait until we have before us the results of the following white crop in order to be able to speak with some confidence regarding the question of unexhausted fertility.

IV. BASIC CINDER AND THE MANURIAL VALUE OF PHOSPHATES OF DIFFERENT DEGREES OF FINENESS.

Although the value of ground phosphate as a manure has been placed beyond all doubt by the results of many careful experiments, yet the quantity of these substances in demand by farmers continues to be exceedingly small in comparison with the great and universal demand for superphosphate. It has been shown year after year at the Experimental Stations of

the Society that the preference given to superphosphate over the various forms of ground phosphate supplied in the market rests upon the solid basis of experience. In almost all cases superphosphate has been found to act more rapidly and more certainly upon the crop than ground phosphates containing the same amount of phosphoric acid. It is a manure to be depended on, no matter what it is made from, producing its results in a regular well-known manner. Ground phosphates, on the other hand, are very irregular in their action, sometimes proving a good manure, sometimes a poor one, and sometimes no manure at all. When my attention was first directed to this curious irregularity, I conceived that it was due to the nature of the phosphate. On the first occasion that Canadian phosphate was used on the stations it was a complete failure, and it was the same at Yester. Accordingly, I concluded that it was a kind of phosphate unsuited for application in the undissolved state. Other kinds of phosphate gave various results, and these differed among themselves in different years. All were what would be called very finely ground; but when the fine powders were put to a more careful test than that of mere feeling with the fingers, it was found that they differed in an extraordinary degree, and later experiments showed that the fineness of grinding had much to do with the efficiency of the manures, and that the nature of the phosphate was of less importance.

In order to put this matter to the test, I took four different kinds of phosphate, viz. :—

Curacao,	. . . .	with 87 per cent. phosphate.
Canadian,	. . . .	59 " "
Carolina,	. . . .	57 " "
Belgian,	. . . .	40 " "

These are representative of the three kinds of phosphates—the high class, middle class, and low class. The object in view in taking Canadian as well as Carolina phosphate was to give it an opportunity of regaining its reputation. Although the phosphates looked very fine, yet it was found that less than 50 per cent. of each was able to pass through a No. 120 sieve, *i.e.*, a sieve of 120 wires per linear inch. A sieve of that gauge was made, and the quantities required were obtained in the sifted form from Messrs Cross & Donaldson. As regards fineness, there were two kinds of phosphate, viz. :—

1st, sifted,—all passing through a No. 120 sieve.

2nd, unsifted,—40 to 50 per cent. passing through a No. 120 sieve.

Besides these natural phosphates, there was brought under my notice an artificial phosphate made in this country, and obtained as a waste product in the dephosphorising of steel. It is ground

to an exceedingly fine powder, and supplied under the name of *Basic Cinder*. It all passed through the No. 120 sieve, so that I could not obtain a coarse sample to test its relative efficacy in the two conditions; but as it was an exceedingly fine powder, and as it is a waste product of which there is an enormous quantity accumulating, and as I was informed by the manufacturers who supplied me with the material that it might be had very cheap if it were found to be of use, I was anxious to put its value to the test. It had been tried in England during the former season, and favourably reported on; and it had also been tested in Germany, with varying success. Besides these phosphates, a superphosphate containing 28 per cent. of soluble phosphate was used in every experiment. Along with the phosphates a certain amount of sulphate of ammonia and sulphate of potash was used, so as to make a general manure, and there was also a "no phosphate" plot attached to every experiment. The basis of the experiment was that each quantity of ground phosphate should contain exactly the same amount of phosphoric acid, so that the richer the phosphate the less of it was used. The composition of the phosphates and the quantities used are given in the subjoined table.

COMPOSITION OF MANURES (LBS. PER ACRE).

No. of Mixture.	Phosphate p. cent.	1	2	3	5	6	7	8	9	10	11	12
Sulphate of ammonia, .	...	5	5	5	5	5	5	5	5	5	5	5
Sulphate of potash, .	...	3	3	3	3	3	3	3	3	3	3	3
Superphosphate, .	28	...	40	28	...	...	...	...	...	...	...	...
Basic cinder, .	40	...	...	...	...	...	...	...	...	...	...	...
Curacao, sifted, .	87	...	...	...	13	...	...	...	...	...	...	...
Do., unsifted, .	87	...	...	...	13	...	...	...	...	...	...	...
Canadian, sifted, .	59	...	...	...	...	19	...	...	...	...	...	...
Do., unsifted, .	59	...	...	...	...	...	19	...	...	...	...	...
Carolina, sifted, .	57	...	...	...	...	...	...	20	...	...	...	...
Do., unsifted, .	57	...	...	...	...	...	...	...	20	...	...	...
Belgian, sifted, .	40	...	...	...	...	...	...	...	...	28	...	...
Do., unsifted, .	40	...	...	...	...	...	...	...	...	...	28	...

Knowing from experience the risks to which such experiments are liable, and the unsatisfactory nature of the evidence frequently afforded by an experiment conducted in one place during one season, I resolved to have this experiment tried in different parts of the country under very different conditions of soil and climate. The following gentlemen kindly offered to try the manure upon their farms, and to personally superintend every detail of the experiment:—Mr R. Shirra Gibb, Boon, Lauder; Mr George Henderson, Shidlaw, Coldstream; Mr J. F. Fairbairn, Greenend, St Boswells. These gentlemen, besides

being practical farmers, are well accustomed to make agricultural experiments, so that their reports regarding these manures are thoroughly reliable. At Pumpherstun there were a few rood plots which were not required this year, and I utilised them for this and a few other experiments.

The following were the manures sent to the various experimenters:—

Mr Shirra Gibb—Manures	1, 2, 3, 5, 6, two sets.
Mr Henderson—	1, 2, 3, 8, 9, two sets.
Mr Fairbairn—	1, 2, 3, 9, 10.
At Pumpherstun—	1, 2, 3, 11, 12.
"	1, 2, 3, 7, 12, two sets.
"	1, 2, 3, 5, 6.

There are thus nine sets of experiments. They all agree in having Nos. 1, 2, and 3, along with a sifted and an unsifted sample of one of the other phosphates. The plots were one fortieth of an acre in extent, but at Pumpherstun they were double that size, namely, one-twentieth acre.

The experiments at Pumpherstun were laid down under my own supervision, and I also had an opportunity of inspecting the experiments at Boon and Shidlaw while the crops were growing. The crop at Greenend was affected to some extent by drought at the beginning of the season, but as careful notes were repeatedly taken, it was found that the disturbance due to that cause was so localised as to render it easy to gauge its extent, and make such an allowance for it as not to interfere with the reliability of the results obtained.

TURNIPS PER ACRE.

	No Phosphate.		Superphosphate		Basic Cinder.		Sifted Phosphate.		Unsifted Phosphate.	
	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.
Boon, . . . (a),	13	17	16	1	13	14	18	0	15	0
Do. (b),	9	10	11	13	14	10	13	10	13	10
Shidlaw, . . . (a),	34	11	37	0	30	11	36	8	32	9
Do. (b),	32	4	33	16	31	11	32	0	32	0
Greenend, . . .	21	3	25	13	21	0	21	5	22	15
Pumpherstun—Plot 34,	9	2	13	0	11	2	12	3	11	4
Do. " 37,	9	5	10	11	11	16	12	11	11	11
Do. " 36,	11	10	13	16	13	19	13	16	12	19
Do. " 37,	7	19	9	5	9	11	8	16	7	17
Average, .	9	9	11	9	11	13	11	17	10	18

The result of these experiments is very easily read. The plot which received no phosphate, but only the general ammonia and potash manure applied to all the plots, has given the smallest return in every instance except two, viz., Shidlaw (b) and Pumpherstun (37), and in these cases it is almost the same as the plot

with unsifted phosphate. It must always be expected that in such small experiments anomalies will occur due to accidental circumstances, especially when the crop under experiment is turnips. The only way to avoid disappointment in such cases is to multiply the number of experiments, and in the case of the experiment before us we are by that means provided against the chance of being misled.

The averages of the experiments show clearly that all the phosphates used have had the effect of increasing the crop. It needs no experiment to prove that superphosphate increases the turnip crop, for long experience has placed it in the position of being one of the manures upon which farmers chiefly rely for that purpose. The object in view in including it in this experiment was to provide a standard by which to measure the efficacy of the other forms of phosphate employed. During the last ten years an animated discussion amounting to a controversy has been carried on regarding the relative merits of superphosphate and ground mineral phosphate as a turnip manure, and as usually happens in such cases, it has been found that a great deal may be said on both sides. The experiment before us shows that much unavailing, though by no means profitless, discussion might have been saved if from the first we had only gone about the matter in the right way. We have all along been comparing the effects of superphosphate with those of the various ground phosphates obtainable in the market, viz., with such samples of phosphate as have been used in this experiment, under the name of "unsifted phosphate," whose results are given in the last column of the above table. It will be seen that in every case but one the effect of the superphosphate is superior to that of the ordinary unsifted phosphate. The superiority is not so marked as in many former experiments, but this is easily accounted for by the nature of the season. Up to the beginning of December the weather was mild, and the turnip crop continued growing till then, so that slow-acting manures had a good opportunity of exerting their influence, and the abundance of rain during the latter half of the season was also favourable to their action.

But the most important part of this experiment is the result obtained by the use of sifted phosphate. It is seen that the more finely ground phosphate has in almost every instance produced a heavier crop than the ordinary phosphate as hitherto applied. It must be remembered, in comparing these two forms of phosphate, that the unsifted phosphate contained about 50 per cent. of phosphate in as fine a state of division as the sifted phosphate, for it is capable of passing through the No. 120 sieve. Had the phosphate which passed through the sieve been used in the one case, and that which refused to pass through

the sieve been used in the other, the difference between the two would have been far more marked, but the result would have been of very little practical use, for a ground phosphate with all the finest powder removed from it is not to be found in the market, and is nowhere used. The object of this experiment is to discover whether it will pay to sift ground phosphate for immediate application to the soil, or to grind it much more finely than has hitherto been the practice. The average results obtained in this experiment show that a gain of from 1 to 1½ tons more per acre is obtained by the use of the more finely ground phosphate, and the question is whether that increase would more than pay for the extra grinding or sifting. It seems reasonable to suppose that it would. If, moreover, we assume, as I think we may, that in an average season the superiority of the more finely-ground phosphate would have been more marked, there is good ground to believe that the finer grinding of the phosphate would result in a certain profit.

If we compare the produce of the plots with superphosphate and those with sifted phosphate, we see that the former is little, if at all superior to the latter; and the next question is, whether would it be cheaper to grind phosphates more thoroughly than has hitherto been the practice, or to dissolve them in sulphuric acid? There need be no doubt that the expense of sifting or of finer grinding would not be so great as the cost of the sulphuric acid and the labour involved in making superphosphate. It may be that during dry seasons, or in the production of cereals or other crops having a short period of growth, there is an advantage in using superphosphate rather than even the finest kinds of ground phosphate, but it is evident from these experiments that in an ordinary, and especially in a wet season, turnips can be grown quite as successfully with ground phosphate as with superphosphate, if only the phosphate is ground to an exceedingly fine powder.

Another important fact brought out by these experiments is the value of "basic slag" or "basic cinder" as a phosphatic manure. It is shown to be distinctly superior to ordinary ground phosphates, and nearly as good as the sifted phosphate in raising a crop of turnips. The most notable characteristic of this manure is its exceeding fineness. It not only passed through the No. 120 sieve, but it passed entirely through a No. 150 sieve, and I do not doubt that its efficacy as a phosphatic manure is in the main to be attributed to the extraordinary fineness to which it is ground. The makers of the manure guarantee that it shall all pass through a sieve of 10,000 holes per square inch, which shows us what can be attained in the way of fine grinding, and it is evident from the

low price at which it is sold—viz., twenty shillings per ton—that the cost of grinding cannot be very great. It may be that from its nature it is capable of being more finely ground than other kinds of phosphate; probably that is so, but at least we are here presented with the important fact that at twenty shillings per ton we can be supplied with a phosphatic manure which is very little inferior to superphosphate in its effect upon the turnip crop. So long as it is supplied in the finely ground state in which it was supplied to me, I have no hesitation in commending it to the attention of farmers.

The only other subject under investigation in this experiment was the relative efficacy of the four kinds of phosphate used. Owing to the fact that only one of these phosphates was tried in each experiment, the means of forming a fair estimate of their relative value are somewhat deficient. The only way of arriving at any conclusion on this point is to compare the crop produced by these phosphates with that produced by superphosphates. Judged by this indirect test, the following would be their order of merit—Belgian, Curaçoa, Carolina, Canadian; but I do not attach much importance to this part of the experiment, as comparative tests upon the same soils would be necessary in order to give a definite answer to this question. The reason why this was not done in the present instance was that it would have required double the number of plots; but I was unwilling to give to the experimenters so much trouble, and in so doing run the risk of endangering the other and more important part of the inquiry.

To those gentlemen who assisted me in this work my best thanks are due for the care and trouble they have bestowed upon it, and for the accuracy of their observations and reports.

The results obtained in this experiment may be summed up thus:—

1. Ground phosphates are the more active the more finely they are ground.
2. When ground as finely as to pass through a sieve of 120 wires per linear inch, they are nearly as active as superphosphate.
3. The nature of the phosphate is of much less importance than the fineness to which it is ground.
4. Basic cinder is at present the most finely-ground and the cheapest phosphate in the market.

Since writing the above I have been favoured by Mr David Wilson, jun., of Carbeth, with a report of an experiment of a similar kind, in which the following phosphates were used:—

- | | | | | |
|------------------------------|---|---|---|-------------------------|
| 1. Basic cinder, | . | . | . | 40 per cent. phosphate. |
| 2. Ground mineral phosphate, | . | . | . | 51 " " |
| 3. Precipitated phosphate, | . | . | . | 72 " " |
| 4. Superphosphate, | . | . | . | 29½ " " |

The precipitated phosphate, although insoluble in water, was almost entirely soluble in citrate of ammonia solution, and having been precipitated, as its name implies, was thus reduced to the finest state of powder—much finer than can ever be attained by any process of grinding. The superphosphate contained 27 per cent. of soluble phosphate, and 1½ per cent. of precipitated phosphate.

The basis of the experiment was similar to that described above, viz., an equal amount of phosphoric acid in each case, and the plots were each $\frac{1}{10}$ acre. The experiment was made in duplicate, and no dung was applied. The following are the results per acre :—

Manures.	First Series.	Second Series.	Average.
	cwt.	cwt.	cwt.
Nothing,	297·7	319·6	308·6
Basic cinder, . . .	487·7	469·6	478·6
Ground mineral phosphate,	450·0	439·5	444·7
Precipitate phosphate, .	509·5	491·1	505·3
Superphosphate, . .	498·4	501·2	499·8

The results obtained by Mr Wilson corroborate those given above, and go to show the extreme importance of fineness of division in promoting the activity of phosphatic manures. The ground mineral phosphate used was a fair sample of the ordinary phosphate supplied in the market, and it will be seen that it is inferior to the more finely ground basic cinder. The excellent result obtained by the use of precipitated phosphate accords with the result of many other experiments made both in this country and in Germany, and also with an experiment made at Pumpherstons last year, and with one made by Mr Shirra Gibb at Boon this year. The result of these experiments in roots per acre were as follows :—

	Boon.				Pumpherstons, 1885.	
	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.
Ground phosphate, .	15	0	13	10	15	2
Superphosphate, .	16	1	14	13	18	15
Precipitated phosphate,	21	13	16	1	18	10

The main fact borne out by all these experiments is that the one great requisite for making an efficient phosphatic manure is that it be reduced to the finest possible state of division—that superphosphate owes its excellence not to the solubility of the phosphate, but to the fact that it is precipitated in the soil in an extremely fine state of division. If it is precipitated before being applied to the soil, and evenly distributed thereafter, the result is quite as good; and if the phosphate, instead of being precipitated, is by means of improved machinery ground down mechanically to the finest possible powder, the results are nearly as satisfactory. The only thing for the farmer to consider is which of these three methods will most cheaply supply him with the phosphate he requires. The results obtained by the use of the basic cinder point strongly to the conclusion that fine grinding, so far at least as the softer kinds of phosphates are concerned, is the process which in the future will be the most economical.

V. GROUND FELSPAR AS A POTASH MANURE.

We are familiar with the fact that felspar, under the slow but constant action of those forces included under the name of weathering, becomes disintegrated and decomposed, and that the potash salt it contains is dissolved away from it by rain, so that streams emanating from districts where felspathic rocks abound are found to contain potash salts, and the level straths laid down by the prolonged action of these streams yield fertile soils that are rich in potash. These soils are the product of natural agencies that have been going on for centuries, and the store of soluble potash salts they contain has been increased to an untold extent by the slow solvent action of the roots of plants that have grown on them, so that the conversion of felspathic rock into a soil so rich in potash as to afford an abundant supply of that constituent for the raising of agricultural crops is the product of the work of centuries. At first sight, it might seem a foolish thing to expect that by merely grinding felspathic rock, and strewing the powder upon soils deficient in potash, the long natural process referred to should be so accelerated as to cause the felspar to act as a source of potash for the immediate use of the growing of crops whose vigorous growth demands a relatively large amount of that substance. Nevertheless, the striking results of an experiment made at the Society's Experimental Station at Pumpherston showed that such an expectation was not altogether unreasonable. Ground phosphates had been used as a phosphatic manure with varying success for some years, and as it seemed that the varying nature of the results obtained

might be due to the varying degrees of fineness to which the phosphates were ground, I made a small preliminary experiment, in which the same phosphate was applied in different degrees of fineness, and I found that the more finely ground the phosphate the more effective was it as a manure. A similar experiment on a larger scale is described in the present volume of the *Transactions*, p. 245, where it is seen that the efficiency of ground phosphates is in direct proportion to their fineness. It therefore seemed reasonable to suppose that felspar, although it is a very insoluble substance, might, if it were ground to an exceedingly fine powder in certain circumstances, be found to yield to the action of the solvents in the soil and in the roots of plants so rapidly as to be available as a source of potash to some crops even during the short period of a single season.

Accordingly I obtained, through Mr Bödtker, the Swedish and Norwegian consul here, at whose instigation the experiment was undertaken, a supply of very pure feldspathic rock, rich in potash, of which enormous quantities are to be had in Norway. It was ground as finely as possible by Messrs J. & J. Cunningham of Leith, and thereafter sifted through a sieve of 120 wires to the linear inch, and was found to contain about 12 per cent. of potash. The whole quantity of sifted felspar was very small, less than half a hundredweight, and as it was received late in the season, the experiment was made simply to afford information which might indicate whether it was desirable to try the experiment on a larger scale the following season. There were two small experiments made—one by Mr R. Shirra Gibb, at Boon, on a crop of pease, and one at Pumpherstoun on turnips. The experiments were on plots of $\frac{1}{10}$ th acre, and the following were the manures employed and the results obtained:—

	Boon.		Pumpherstoun.
	Dried Produce in bulk.	Grain.	Turnips. Bulbs.
1. { Sulphate of potash, 3 lbs., Sulphate of lime, 3 lbs., Superphosphate, 6 lbs., }	114 lbs.	3·8 lbs.	482 lbs.
2. { Ground felspar, 12 lbs., Sulphate of lime, 3 lbs., Superphosphate, 6 lbs., }	102 lbs.	3·5 lbs.	496 lbs.
3. { Sulphate of lime, 3 lbs., Superphosphate, 6 lbs., }	96 lbs.	...	476 lbs.

Although the whole experiment is on a small scale, and the crops are below average, there is nevertheless a clear indication

that the felspar has acted as a potash manure. In both cases, where no potash was applied, the crop is the smallest. At Boon the plot with no potash was unable to mature its seed, so that it could not be threshed, while on the other two plots the amount of seed was not very different, and quite in proportion to the total crop, viz., about one-fortieth. The smallness of the crop does not detract from the value of the experiment as a means of indicating whether or not felspar acts as a potash manure. Had the crop been sown at the proper time it would have been much larger. In the case of the turnip crop the ground felspar has done better than the sulphate of potash. That may be accidental, but it may be that the insoluble form in which potash is contained in felspar is more favourable for turnip growing than the soluble sulphate. Soluble potash manures, when applied to the turnip crop, sometimes diminish rather than increase the crop, and this is especially the case where the crop is dunged in the drills; but no dung has been put on the Pumpherston station these twelve years, and the results obtained all over the field show that potash is now required for turnip growing on that land.

Upon the whole, the result of this experiment may be taken as showing that potash felspar, when ground to an exceedingly fine powder, is capable of acting as a potash manure even in a single season, and encouraged by this experiment I mean to try it again on a larger scale on various crops in different districts next season.

VI. ANALYTICAL ASSOCIATIONS.

It is now seven years since the Society took an active interest in the working of local analytical associations throughout the country. Every year since then a report has been issued at the general meeting in January, describing the work done by these associations, and the means which the Society, through its Chemical Committee, has adopted for their encouragement and regulation; and on several occasions reports have appeared in the body of the *Transactions*, in which the objects aimed at in supporting the associations have been explained, and cases of gross deficiency in the composition of the manures and feeding stuffs supplied to members of associations have been recorded. It is two years since such a report was issued, for at this time last year it was found that the supply of manures and feeding stuffs to members of the associations had been of such a satisfactory kind, that no special notice required to be taken of them by the committee. Not that there were no cases of deficiency

in the quality of the supply of these substances recorded, but the cases of alleged deficiency were such that, on careful inquiry into the circumstances of each, the committee found that they were due to errors for which the associations were themselves responsible, or that they were otherwise capable of a satisfactory explanation.

The committee would have been glad if no special report had been required of them this year; but a careful scrutiny of the returns sent in during the past year has shown them that there is still much room for improvement in the manner in which analytical associations carry on their work, and also that instances of carelessness have occurred on the part of sellers that require to be taken notice of.

They also notice that, in spite of their repeated explanations, the objects of the Society in interfering with the work of the analytical associations, and the regulations they have framed for their efficient working, are not sufficiently understood, neither by buyers nor by sellers.

Seeing that the main object of analytical associations is the protection of buyers, it was quite natural, when the Society came to the assistance of the associations, that sellers should have regarded the Society's action with displeasure and distrust. The procedure of the associations had in many instances given them just cause of complaint, and they viewed with alarm the probability that, with the powerful backing of the Society, the associations would be able to harass them with greater impunity. It is needless now to say that these fears were entirely without foundation; for it is now evident that the action of the Society, while it has strengthened the associations very materially, has in even a greater degree afforded protection to sellers.

When the Society began to inquire into the working of the associations, it found that in their arrangements for the protection of their members the sellers frequently received very scant justice. Each association managed its affairs in its own way. In some cases it was found that the buyer sampled the stuff sold to him himself, according to a method of his own; and in some cases the recognised methods of sampling were very defective. Frequently the custody and management of the samples were open to objection, and in most cases the sellers had no opportunity afforded them of being present at the drawing of samples on whose analyses their reputation was in a measure staked; and in cases where only single samples were taken there was no opportunity afforded the sellers of rectifying errors in the sample or in the analysis. Chemists were not usually asked to verify the results of their analyses, and their comments and valuations were regarded as final. Different chemists had different methods of stating analyses, which led to much confu-

sion and misconception; and each chemist had a system of valuation of his own, so that the same substance was differently valued according to the various opinions of chemists who, it may be presumed, had a very defective acquaintance with market prices, and who had not the materials at their command to give fair valuations. Moreover, there were complaints of a very grave kind not unfrequently muttered in reference to malpractices of a local or personal nature, that were rendered possible from the loose manner in which some associations allowed their operations to be conducted. The defective manner in which some associations managed their affairs was such as to deprive their members of any real protection; and altogether the whole system of analytical associations was in a very unsatisfactory state.

When the Society agreed to subsidise the associations, it framed a series of conditions attached to the giving of the annual grant, which were meant to remove these irregularities and defects, to secure that the protection aimed at by the associations should be a real protection, and that the interests of both buyers and sellers should be impartially safeguarded. It is unnecessary here to give any detailed statement of these conditions, as they are to be found in another part of this volume (Appendix B, p. 30). A careful perusal of them will, it is hoped, show that they are conceived in a spirit of fairness, and that they are such as to merit the approval and receive the hearty support, not only of members of associations, but of all sellers who are carrying on a legitimate trade.

That the connection of the Society with the associations has been productive of great benefit is amply attested by the very marked improvement in the character of manures supplied to the members since their purchases have come under the scrutiny of the Chemical Committee. The proportion of deficient manures, which was at first about 25 per cent. of the total purchases of the associations, has in six years been reduced to less than 5 per cent.; and there is evidence that the members of the associations are being rapidly educated in the interpretation of analyses and in the valuation of manures by the use of units applied to the analytical results.

An important part of the work done by the Society for the associations is the annual preparation of a series of unit values, by which members are enabled to estimate the value of manures on the basis of their analyses. The units are adjusted with much care, so that they may be in harmony with the market prices of manures as sold by merchants who are conducting a safe trade and are content with reasonable profits. The annual scheme of units is becoming more and more appreciated by members of the Society, and it is also in demand by many members of the manure trade, although it is but just to state

that there are still some eminent and eminently respectable manure merchants who regard this part of the Society's work as entirely outside of its sphere, and as an unwarrantable interference with the natural course of an industry in which the Society has no stake whatever. The Society recognises the force of the objection, but the question before it is, not whether it shall adopt a system of valuation or not; the question is, whether it shall fix a scale of values on a uniform and intelligible system, with due regard to the interests of all parties, or leave it in the hands of associations or their chemists to value manures according to any system they please. After six years' experience, the Society is convinced that the former course is the right one, and it will therefore continue to issue the scheme of unit values as usual. It has no private ends to serve, and it cordially invites the criticism and co-operation of all who are interested in seeing the manure traffic carried on in an intelligent and reasonable manner.

Although the connection of the Society with the associations has lasted for six years, it cannot yet be said to have entirely passed the stage of experiment. The regulations imposed upon the associations have been slightly altered from time to time as experience suggested improvements, and the associations have only slowly been able to comprehend the exact nature and extent of the duties required of them in order to conform with the terms of the regulations. Every year a considerable number of schedules are sent up in an imperfect condition, and the final adjustment of these has caused so much trouble and correspondence that it has been resolved to apply hereafter the conditions of Regulation IV. with perfect strictness, so that no application for a grant will henceforth be considered unless the schedule appertaining to it is in order from the first.

It has been frequently noticed, that when the Chemical Committee have for some reason been led to inquire into the exact details of some purchase, an irregularity of a vital kind has occurred, which makes it impossible for the Society to take any action upon it, and yet the schedule referring to the purchase has been fully filled up, and everything has seemed in order. The secretaries have on all occasions acted in perfect good faith in filling up the schedules, but they have on many occasions relied too implicitly on the accuracy of the information supplied to them, or on the care of the members in complying with the rules of the association, or some misunderstanding has occurred between buyer and seller, or between the buyer and the secretary. The proportion of cases of deficiency that have broken down from such causes is so large that the committee have reason to fear that, if the details of all the purchases were inquired into, a very large number of schedules that are passed

as being satisfactory would be disqualified from obtaining the Society's grant. Most of the failures have been caused by irregularities or misunderstandings regarding the guarantees. Guarantees are sometimes couched in very evasive terms, and they are sometimes affected by reservations that are not sufficiently understood; sometimes it is the seller who is at fault, and sometimes it is the buyer. The investigation and explanations which these irregularities entail cause much irksome correspondence between all parties concerned, and render the post of secretary to an association too laborious for one who not unfrequently gives his services gratuitously.

In order to diminish this inconvenience as far as possible, the Society has resolved that the guarantees of manures and feeding stuffs shall henceforth be all of a uniform type, and couched in terms that are quite unmistakable. For this purpose, printed *guarantee forms* have been prepared, and these will be supplied to secretaries of associations for distribution among the members; and these forms, filled up and signed by the sellers, must henceforth accompany every schedule, containing the details of a purchase for whose analysis a grant is asked.

In order still further to lighten the labour of secretaries, and to guide them in the discharge of their duties, the following *method of procedure* has been drawn up; and it is hoped that, by a strict adherence to these instructions in the order specified, much unnecessary correspondence and friction will be avoided.

METHOD OF PROCEDURE to be followed by Secretaries and Members of Analytical Associations applying for Grants from the Highland and Agricultural Society.

1. When a member makes a purchase he must obtain from the seller an analytical guarantee, written and signed by the seller upon a form supplied by the Society.

2. When the member receives delivery of the stuff bought he must inform the seller of the time and place at which the samples are to be taken for analysis, so that he may have an opportunity of being present.

3. In sampling a manure or feeding stuff the Society's printed instructions for sampling must be strictly complied with.

4. The sample (if it is to be analysed) must be sent to the chemist within a week of the date of sampling, so that any deficiency may be immediately detected.

5. The chemist must be asked to send in his report of analysis within a fortnight after receiving the sample.

6. When an analysis shows the sample to be deficient to such an extent as to require investigation by the Society, the association's chemist must be asked to verify the accuracy of his analysis, and report the matter within a week.

7. When a deficiency has been confirmed, the secretary of the association must immediately inform the seller thereof, and draw his attention to the provisions of Regulation III.

8. At the same time the duplicate sample must be sent to the Secretary of the Highland and Agricultural Society, and along with it must be sent the schedule relating to the purchase, and also the guarantee form, both accurately filled up in every particular.

9. Any correspondence that may ensue with the seller or buyer must be forwarded to the Secretary of the Highland Society as soon as received, so that the committee may be able to investigate the matter with full knowledge of all the details.

10. The schedules (accurately filled up) of all samples for which the association claims a grant, along with the signed guarantees appertaining to them, must be sent to the Secretary of the Highland and Agricultural Society on or before 1st November, or they will not be entertained.

For a detailed account of the number of analyses for which the Society has been asked by the associations to contribute its grant, the reader is referred to the Annual Report, p. 393, and to Appendix B, p. 41.

Out of the 226 analyses included in the grant this year, 26 were found to be deficient to the extent of fully one-tenth of the amount of one or other of the valuable constituents guaranteed. It was found, upon investigation, that several of these deficiencies were due to deterioration in the samples during long keeping, and others were due to mistakes on the part of the buyers regarding the amounts of constituents guaranteed. In one case, the duplicate sample had been inadvertently destroyed, so that no further notice could be taken of it. In three cases it was found that the association's chemist had been in error, and that the duplicate samples when analysed by the Society were found to be up to their guarantees. In some other cases, the discrepancies were very slight, and they were capable of satisfactory explanation. Twenty out of the twenty-six cases of deficiency were thus disposed of. The remaining six show deficiencies so considerable that the committee, after careful consideration, have resolved to publish the details regarding them.

The following are the Guarantees and the Analyses of the Samples:—

	Name of Association.	Manure.	Guarantee.	Analysis.	Price.	Value.
1	Kirkcudbright Analytical Association,	{ Dissolved bones, Do.,	Soluble phosphates, 24.56 Insoluble do., 5.24 Ammonia, 2.74	19.44 } 10.00 } 2.38 }	£ s. 5 10	£ s. 4 5
2	Do. do.,		Soluble phosphates, 22 Insoluble do., 14 Ammonia, 3.5	16.68 } 20.00 } 2.85 }	6 10	5 0
3	Do. do.,	{ Superphosphate,	Soluble phosphates, 26 Insoluble do.,	22.24 } 4.05 }	3 0	2 8
4	Leamarkshire Analytical Association, .	{ Ichaboe guano,	Soluble phosphates, 3.14 Insoluble do., 11.99 Ammonia, 12.47	6.94 } 13.06 } 9.79 }	12 10	...
5	Easter Ross Farmer's Analytical Association,	{ Vitriolated bones,	Phosphates, 35 Ammonia, 4	30.00 } 3.43 }	6 3	5 12
6	Turriff and Garioch Analytical Association,	{ Raw bone flour,	Phosphates, 50 Ammonia, 4	47.76 } 2.97 }	7 3	6 7

Regarding the three different manures supplied to members of the Kirkcudbright Analytical Association, there is nothing to remark, except that the manufacturers have been somewhat careless. The manures they have supplied have been good enough of their kind, but not of so high a quality as was guaranteed.

Sample 1, supplied by Mr John Sproat, Dalbeattie, has been sold at a price far above its value, but that is mainly due to the deficiency in quality. The seller acknowledged there had been a mistake, and agreed to make a corresponding deduction in price.

No. 2, supplied by Messrs J. & T. Williamson, Kirkcudbright, was a sample of dissolved bones, containing more bone material than is usually found in manures of that description. The sellers are strong upon the point that the manure is "absolutely pure dissolved bones, with sulphate of ammonia added"; but it is quite evident from the analysis, that either the manure was not pure dissolved bones, or the sulphate of ammonia had not been added. The sellers seem to be in some confusion regarding their guarantees, and the nature of the goods they are selling, for they send in what they declare to be another analysis of the same stuff, dated 1st April, showing the following percentage of valuable ingredients:—

Soluble phosphate,	.	.	.	.	15.42
Insoluble phosphate,	.	.	.	.	32.56
Ammonia,	.	.	.	.	2.24

This third analysis is seen to be so different from the other two that we are forced to conclude that they cannot possibly refer to the same bulk. If they are intended for the same stuff, the manufacturers must have a very irregular method of making their dissolved bones, so as to produce results so very dissimilar from three different batches of what was intended to be the same manure.

No. 3, supplied by Mr H. Thomson, Dalbeattie, is simply a case of a superphosphate insufficiently dissolved. The seller was at a loss to understand how the discrepancy occurred, and gave three reasons for the deficiency of soluble phosphate:—

- (1) The sample drawn may not have been a fair one.
- (2) The chemist may have made a mistake in his analysis.
- (3) The soluble phosphate may have *reverted* 4 or 5 per cent. during long keeping.

The seller was not restricted to the old orthodox *three guesses* to account for the discrepancy; he might have added a fourth, and not a very far-fetched one, viz., the amount of sulphuric acid added may not have been sufficient to attain the degree of solubility guaranteed. Had he only hit upon that

reason, he would have solved the problem, and perhaps he would then have considered the propriety of giving the buyer an abatement in price corresponding to the deficiency.

No. 4 is a sample of Ichaboe guano, supplied by Messrs J. & J. Cunningham, Leith; it is deficient in ammonia to about $2\frac{1}{2}$ per cent. The occurrence of this deficiency gave rise to some correspondence, which the Chemical Committee think ought to be published.

When the sellers were informed of the deficiency they sent the following reply:—

Jas. Lindsay, Esq.

11th June 1886.

Sir,—We are favoured with your letter of yesterday's date in regard to an analysis, said to be that of Ichaboe guano sold by us to Mr Wood, Wolfelyde. We are very far from satisfied with the result, and think the samples cannot have been properly drawn. Not having been present when it was drawn, we are in no way bound to recognise it at all. At the same time we shall be glad to know if the directions of the Highland and Agricultural Society were strictly followed, and if a member of your committee was present. We have to point out also that in circulars issued to our customers we always specially exempt *Ichaboe guano* from any guarantee of analysis. We gave the average landing analysis of the guano in the same good faith as we received it from the lessees of the island's import agent, but without any further guarantee except that it is genuine as imported. Receiving no guarantee ourselves, we can give none. It is, besides, an article of which it is peculiarly difficult to draw a fair average sample, because it is obvious that the absence of a feather or two in a small sample will make a material difference in the percentage of ammonia obtained.—Yours truly,

J. & J. CUNNINGHAM.

P.S.—Of course, we don't doubt that Mr Wood drew the sample to the best of his ability.

To this communication Mr Lindsay replied:—

15th June 1886.

. . . . The particulars of the sampling, &c., &c., of the Ichaboe guano bought by Mr Wood were supplied to me by him on a schedule of the Highland and Agricultural Society, and from this it appears that Mr Wood has strictly observed the necessary rules as to giving notice of sampling to the sellers; having two witnesses, in the absence of a representative; keeping duplicate samples, &c., &c. I cannot speak as to the correctness of the guarantee, as this would naturally be a matter of adjustment between Mr Wood and you; but it is entered on the schedule referred to thus:—

Soluble phosphate,	3.14
Insoluble "	11.99
Ammonia,	12.47

The price per ton is entered at £12, 10s.

Having had an invitation to be present when the guano was sampled, you cannot reasonably object to the samples which were drawn by Mr Wood in the presence of James Henderson and Thomas Wood; and on the whole I hope you will let me know how the matter is adjusted, as in the absence of a satisfactory settlement it would be my duty to forward a duplicate sample to Dr Aitken.—Yours faithfully,

JAS. LINDSAY.

To this the sellers reply:—

Jas. Lindsay, Esq.

16th June.

Dear Sir,—We have your favour of yesterday. We have no doubt we shall be able to settle the matter with Mr Wood to his satisfaction, and as requested we shall be glad to let you know the terms on which it has been adjusted when we have succeeded.—Yours truly,

J. & J. CUNNINGHAM.

When the schedules of the associations were being examined by the Chemical Committee early in December, notice was sent to all Secretaries among whose schedules instances of deficiency were observed, and the secretaries were asked to communicate with the sellers in the ordinary terms. To his communication regarding this manure Mr Lindsay received the following reply:—

7th December 1886.

Dear Sir,—We duly received your favour of 4th inst. We have been looking up our previous correspondence, and we find that we have to apologise for having omitted to advise you, as we promised to do, that we settled the matter to Mr Wood's satisfaction by an allowance of £1, 3s. 9d. per ton.

We presume the omission on our part explains the publication by your association of the analysis and other particulars (which involve, as we can prove, serious misstatements of facts), and also how the matter has come under the consideration of the Highland and Agricultural Society. For we settled with Mr Wood in that manner, not as in any way admitting either that the analysis was correct, or that the sample had been properly drawn, but solely because your letter of 15th June led us to understand that if we did settle with Mr Wood to his satisfaction there would be an end of the matter.

We need scarcely say that otherwise we would not have settled with Mr Wood, nor would we have allowed the matter to rest where it did. But we were at the time in the midst of a controversy with the Kelso Analytical Association in regard to the analysis of a sample of fish guano, and the association's analyst was ultimately proved to be wrong to the extent of 2½ per cent. ammonia and 4½ per cent. phosphates; but the correspondence was so protracted, harassing, and unsatisfactory, that we preferred to lose money by coming to a settlement with Mr Wood, as indicated in your letter, rather than undergo a similar amount of worry and annoyance.

We have only again to repeat that we gave Mr Wood no guarantee of analysis of the Ichaboe guano, and we may point out that the valuation of the guano printed by the association as that according to the Highland Society's scale must be wrong, inasmuch as the Highland Society published no scale last year for the valuation of Ichaboe guano.—Yours truly,

J. & J. CUNNINGHAM.

In the meantime, Mr Lindsay had been asked to furnish the Chemical Committee with the actual guarantee given by the seller to the buyer. Accordingly, Mr Lindsay wrote Mr Wood about it, and received the following reply:—

Mr Lindsay.

Wolfelyde, Biggar, 7th December 1886.

Dear Sir,—In reference to the Ichaboe guano in question, it is not in the list of quotations signed and sent by the sellers to me, but was bought afterwards from Mr Gillespie at Biggar according to analysis (specially referred to) in annual circular at the price already given. I did not

consider a written document was necessary when special reference was made to the printed circular by said firm at purchase.

As to drawing of samples, the agent was told as usual when and where samples would be drawn, but declined to have a representative present. In sampling, three or four bags were opened, and a long draining spade put down the centre of each, and what was brought up was all mixed together on a sheet of paper, and the bottles filled therefrom. So I think it got rather more than justice. The centre of the bags is nearest the original deposit.—Yours respectfully,
J. C. Wood.

The sellers were asked to send a copy of their annual circular, so that the committee might judge for themselves of the correctness of the guarantee; and in their letter the sellers remarked, "We forget whether we have ever informed you that, on Mr Wood's instructions, to put it in a better state for sowing, the guano was put through a pulveriser and riddled, which process may have removed some feathers, and we think that this would tend considerably to reduce the nitrogen."

The object the committee have in publishing the above correspondence is, in the first place, to draw attention to some irregularities which frequently give trouble, and which are the cause of much needless correspondence between parties; in the second place, to draw attention to the unsatisfactory nature of the guarantee under which guanos are bought and sold.

In their first letter the sellers find fault with the sampling and with the sample. That is a common practice where the manufacturers are not the immediate sellers. The stuff in this case was bought from an agent who had an opportunity given him of being present at the sampling had he so chosen. The secretary had no doubt that the Society's regulations as to sampling had been carefully complied with; but when he received a description from Mr Wood of the method of sampling he employed, it was found to differ materially from that described in the Highland and Agricultural Society's instructions. It was sampled in a way which Mr Wood considered did "more than justice" to the manure. This is one of many similar cases that have come before the notice of the committee. It is found that some associations adhere to methods of sampling to which they had been accustomed before they came under the Society's regulations, and in other cases there are buyers who think they can devise better methods than those published by the committee. Hereafter, the committee will not recognise any sample that has not been taken in exact accordance with the Society's printed instructions.

The sellers deny that they give any guarantee of analysis in selling Ichaboe guano. The committee are of a different opinion. Peruvian and Ichaboe guanos head their list of manures in their published circular, and the analyses are given to the second place of decimals. Any buyer reading that list understands

that these analyses are analytical guarantees. Moreover, on a former page, where Ichaboe guano is described, its analysis is distinctly guaranteed.

The sellers point out that, at the end of their circular, there is a note in which they say that they guarantee all manures except Peruvian and Ichaboe guanos, which are warranted "genuine as imported." But that is a note which may escape any one's observation, for no reference is made to it in those parts of the circular where Ichaboe guano is referred to, and its analysis given. The committee consider that the seller is responsible for the actual composition of what he sells, and the buyer is interested in knowing the actual composition of what he buys. The landing analysis is an analysis of a whole cargo, which may vary in quality enormously in different parts. The average analysis is of value only to those who buy the whole cargo. It has no interest for a buyer who buys one or two tons, which may be ever so much better or worse than the average or landing analysis. In this case the quantity purchased was only two tons, and it was sold riddled and ready for sowing. The committee consider that the sellers are not justified in endeavouring to explain away in this manner the binding nature of their guarantee.

The secretary, in his letter of 15th June, last sentence, informs the sellers that, in the absence of a satisfactory settlement, the samples will be sent in to the Society's chemist, and the sellers are left under the impression that if they make a satisfactory settlement the samples will be retained, and nothing more heard of the case. But the secretary of an association has no power to prejudice the action of the Chemical Committee. His duty, as soon as he discovers a case of deficiency, is to send the duplicate samples to the Secretary of the Highland Society. He may take part in any arrangement of differences between buyer and seller that he sees fit, but these must eventually come under the consideration of the Chemical Committee, to be dealt with by them in accordance with the Society's regulations.

No. 5 is an instance in which there has been a misunderstanding as to the composition of a lot of vitriolised bones sent to an agent for sale. On examining the correspondence in connection with this matter, it is found that the mistake is one for which the manufacturers, Messrs Proutie Brothers, Stowmarket, are responsible. They supply a kind of vitriolised bones, guaranteed to contain 30 to 35 per cent. phosphate and 3 to 3½ ammonia, and this is evidently the stuff that has been supplied; but they also advertise a similar manure under a guarantee of 35 per cent. phosphate, and *about* 4 per cent. ammonia, with an allowance of so much per unit of phosphates and ammonia if it fall below that guarantee, and they call it "special vitriolised

bones." A quantity of stuff so marked was received and sold under guarantee of 35 per cent. phosphate and about 4 per cent. ammonia, with the above result. These guarantees are somewhat loose, and the explanations given of the above deficiency are not at all clear.

No. 7 is described by the sellers, Messrs John Milne & Co., Dyce, as a sample of a small residue of a cargo of bone meal, bought three years previously. It was analysed at the time of landing, and found to contain the amount of phosphates and ammonia guaranteed, and an analysis of a delivery that year showed it to be somewhat over the guarantee in both constituents. The sellers consider they were justified in selling the residue three years later, on the strength of the original analysis, but they are quite unable to account for the deterioration that has taken place in the quality of the stuff.

The organic matter of bones is liable to decay and the amount of ammonia gradually diminishes on keeping, and, it may be, that in certain circumstances even the phosphorus diminishes. A faint smell of phosphuretted hydrogen is often felt in bone stores, and it may be regarded as not impossible that such a deterioration as that indicated may have occurred, at least to some extent. In order to prevent the recurrence of such mistakes, it is evident that stuff of any kind liable to change should not be sold upon the basis of an old analysis.

There are no cases of actual fraud to record this year in connection with the association manures. The above-mentioned cases of deficiency have been recorded in order to impress both buyers and sellers with the necessity of increased care in the sale and purchase of manures. Sellers ought to have their goods entirely under analytical control, and buyers ought to buy no manures nor feeding stuffs without obtaining an analytical guarantee from the seller, exactly in the form of those supplied by the Highland and Agricultural Society (see Appendix B, p. 38).

Three-fourths of all the trouble will cease when these guarantee forms are adopted.

The most worthless kind of manure supplied to members of associations this year was a stuff called by the high-sounding name of "The Land Fertiliser," and sold by an association rejoicing in the title of "The British Farmers' Manure Supply Association." It was sold to a member of the Arbroath Analytical Association, without a guarantee, and it was found to contain 8.96 per cent. of phosphates and 1.12 per cent. of ammonia. It is worth about 20s. per ton, and was bought at 70s. per ton.

The purchaser has probably done good service in buying a small quantity of this manure, so that he might be the means of preventing others from being misled by the captivating title under which it is offered to the public.

ACCOUNT OF THE SOCIETY'S DAIRY DEPARTMENT.

THE improvement of the dairy and dairy produce has in a particular manner engaged the attention of the Highland Society for many years, and in various ways. First by the offer of premiums; secondly, by publishing reports on the management of dairies at home and abroad; thirdly, by giving grants in aid of local efforts; and lastly, by having a working dairy at the General Shows.

I. PREMIUMS OFFERED AND AWARDED.

In 1796 the Society offered a gold medal, or plate of the value of ten guineas, to the person, in the counties of Bute and Dumbarton, who should in the year 1796 make for sale the greatest quantity of cheese of the best quality in a dairy of twelve cows or upwards, the quantity not being less than 36 stones weight. At the same time, a similar premium was offered to the person, in the counties of Angus and Mearns, who should, in 1796, make butter for sale, of the best quality and greatest quantity, from a dairy of twelve cows and upwards, the quantity not being less than 36 stones weight. The premium for cheese was awarded to Mrs Campbell of Stonefield, but there was no competition for the butter.

In 1815, upon a report from several members of the Society at Glasgow of the beneficial effects attending Mr Wm. Harley's extensive dairy establishment at Willowbank, in the vicinity of that city, the Highland Society, as a mark of its approbation, voted a piece of plate of twenty guineas value to Mr Harley.

In 1821 the Society, considering the importance of promoting a general system of improvement in the dairy throughout Scotland, as one great branch of rural economy, which had not then received sufficient attention, gave the first of a series of premiums for the best managed dairy. It having been found by experience that, in promoting improvements, when premiums are limited to districts of moderate extent, competition is more readily excited, the Society, in the first instance, offered these premiums in the counties of Haddington and Linlithgow. The prize, a piece of plate of the value of twelve guineas, was awarded to William Boak, Bloom, Livingstone, Linlithgow.

In 1822 the prizes were open to the counties of Stirling, Dumbarton, and Renfrew. The first, a piece of plate of the value of twelve guineas, was won by Misses Elizabeth and Frances Dunlop, Househill, Paisley; the second, ten guineas, by John Gow, Portnellan, Dumbartonshire.

In 1823 two prizes of similar value were open to the counties

of Berwick, Roxburgh, Selkirk, and Peebles, and were awarded, the first to Miss Dunlop, of Whitemuir Hall, Roxburgh; and the second to John Somerville, Ladyurd, Peebles.

In 1824, 1825, and 1826 premiums, open to all Scotland, were offered for making cheese of the most approved descriptions. The premiums were attended with such good effects that it was afterwards resolved to give encouragement, in succession, to such districts as appeared most suitable. In 1827 the premiums were given to the counties of Lanark and Aberdeen. In 1832 they were in operation in the counties of Argyll, Aberdeen, and Dumfries. In 1833 they were given to the counties of Argyll, Aberdeen, and Kincardine; and in 1834 and 1836 to Banffshire.

In 1838 the system of premiums, open to all Scotland, was revived and continued in 1839 and 1841.

The district premiums for improving the quality of cheese were continued and are still in operation.

While thus premiums were offered and awarded with the view of improving the quality of cheese, the Society did not overlook the curing of butter. For instance, in 1825, a piece of plate of the value of £35 was offered in the county of Aberdeen to the person who should cure the largest quantity and best quality of butter for the market. The premium was awarded to Robert Morrison, baker, Peterhead. Similiar premiums, but of smaller amount, were awarded in succeeding years in various districts of Scotland, and are still in operation.

The system of offering premiums for dairy produce at the General Shows was commenced at Aberdeen in 1834.

II. REPORTS PUBLISHED IN THE TRANSACTIONS.

Among the Reports on Dairy Management published in the *Transactions*, the following may be briefly referred to:—

First Series.

In the sixth volume there is an abstract of the reports made by the successful competitors, in so far as the premiums had then been decided. The results show that the dairy husbandry had yielded a better return to the competitors than they could have realised by any other system of management.

Second Series.

In the first volume there is an exhaustive report on the competitions for the 1824, 1825, and 1826 premiums, open to all Scotland. The first competition took place in Edinburgh on the 22nd December 1824, and the premiums were for the best specimens of Dunlop and imitation of double Gloucester cheese. Twenty-one competitors appeared, and a great number of cheeses were submitted to inspection. The committee were

favoured with the aid of several gentlemen of long and extensive practice in the cheese trade. All the cheeses made after the Dunlop method were reported to be excellent; twelve of those in imitation of double Gloucester, which were selected for final competition, were considered as equal, in quality and flavour, to the general run of real Gloucester cheese. In the following year, imitations of double Gloucester and North Wiltshire were selected for competition. The judging took place in Edinburgh on the 5th January 1826, the committee being again assisted by various individuals largely engaged in the butter and cheese trade, upon whose authority they reported that the quality of the whole was excellent. On a careful comparison of the cheeses produced, with some genuine Gloucester and North Wiltshire, the judges stated that the quality of the prize imitation double Gloucester was fully equal to the real cheeses of that variety; and that the imitation North Wiltshire also was little inferior to the real. The third competition took place at Edinburgh on 3rd January 1827, and included imitations of Cheshire, Stilton, and North Wiltshire. The competition for imitation of Cheshire failed. Some excellent cheeses were produced, but they were not Cheshires; and, in reference to this variety, the practical judges remarked that it had always been found particularly difficult to imitate either in Scotland or in other counties of England itself. Appended to the report are full instructions for making different kinds of cheese and on the best means of salting and preserving butter. In the same volume there is an account of the Dairies and Meadows of Holland; and articles on the temperature at which butter can best be procured from cream.

In the second volume there is a report on Dairy Management, having reference to the premium of £30 offered for the best-managed dairy in the county of Lanark, 1829-30. The premium was won by Mr Archibald Brown, Tarbrax.

In the third volume there are directions for making cheese resembling that of Gloucester or Wiltshire, and a note respecting the method of communicating the flavour of new to old cheese by inoculation.

In the fourth volume there is an extensive report on the Dairy Husbandry in Holland. In 1831 the Society, considering the advantages that might be derived from an acquaintance with the modes of managing dairies in Holland, offered a premium for the best report on the subject, founded on personal observation. It was intimated that the report should be required to detail the description of pasture and general treatment of the cows; the process of manufacture of the butter and cheese; to furnish a description of the dairy utensils, with the mode of keeping and cleaning them; and to present an

account of the milk and cheese houses, with reference to interior arrangement, position, and ventilation; together with such other circumstances as might appear useful and interesting. The premium (ten sovereigns) was awarded to Mr John Mitchell, merchant, Leith.

In the sixth volume there is a report of two competitions for cheese which took place in the year 1832—one at Inveraray on the 17th of October, the other at Dumfries on the 31st of the same month. That at Inveraray was for imitation of English, and at Dumfries for skimmed-milk cheese. Six competitors appeared at Inveraray, each producing three cheeses. The first premium was awarded to John Lorne Stewart of Gloubuckie for the best imitation of double Gloucester cheese, and the second to Peter Harvie, Glenfinnart, Cowal, for the best imitations of Stilton and North Wiltshire cheeses. What struck the judges most forcibly was an excellent imitation of Cheshire cheese, for which particular kind no premium had been offered, as in all former competitions the competitors had never succeeded in making a good imitation of Cheshire cheese. This specimen was produced by Mr James Cringan, Ballimore, and the judges gave him a small gratuity as a mark of their approbation of his success. At the competition of skimmed-milk cheeses, at Dumfries, six competitors appeared, bringing with them six cart-loads of cheese. Mrs Mackay, Dinwoodie Green, was found entitled to the first prize; William Niven, Barnmuir, to the second; and John Rodan, Foregirth, to the third. Appended to the report are receipts for making double and single Gloucester, Stilton, Wiltshire, and skimmed-milk cheese. This report also contains an account of the competition for the butter premiums at Charleston of Aberdeen, on the 26th October 1835; at Kirkwall, in 1835; and at Lerwick, in November 1837. Appended are receipts for making and curing butter.

Third Series.

The first volume contains reports on the production of butter; on churning; on the effects of certain plants on butter. The third volume contains reports on the influence of the mode of churning for producing hardness and softness in butter, and on the influence of the air on the process of churning. The ninth volume contains a report on the manufacture and comparative advantages of Dunlop and Cheddar cheese. The tenth volume contains reports on the manufacture of Cheddar cheese, and on the use of annatto in colouring cheese.

Fourth Series.

The seventh volume contains a report on dairy management as pursued in Galloway. The twelfth volume contains a report

on the different methods of making and curing butter in this country and abroad. The fourteenth volume contains a report on the results of different modes of feeding on the quantity and quality of butter and cheese. The seventeenth volume contains a report on Scotch cheese-making. The eighteenth volume contains a report on dairying in Scotland. The present volume contains a report on feeding and management of dairy cows.

III. GRANTS IN AID OF LOCAL EFFORTS.

In 1884 the Directors, on a report by a special committee, resolved to give encouragement and assistance in the establishment and carrying out of dairy schools, and in the employment of itinerating instructors and demonstrators on cheese and butter making. A standing committee, composed of members of the Board and representatives of the principal dairy districts of Scotland, was afterwards appointed, Mr McQueen of Crofts being named convener. In 1885 the committee reported that they considered dairy schools most important, and that they should be established by the Dairy Association in the first instance. The Directors approved of the suggestion, and, with the sanction of a general meeting, placed £100 at the disposal of the committee to aid local efforts in the employment of itinerating instructors. The grant was in February 1886 apportioned among the different branches of the Scottish Dairy Association as follows:—

Branch.	Secretary.	Amount.
Ayrshire,	James M'Murtrie, Ayr, .	£31 0 0
Wigtownshire,	Alex. Aitken, Stranraer, .	29 3 0
Kirkcudbright,	Richd. Henderson, The Grange, .	13 16 0
Dumfriesshire,	John Henderson, Lockerbie, .	12 18 0
Upper Ward of Lanarkshire, .	James Lindsay, Eastfield, .	10 0 0
Argyllshire,	James Lothian, Campbeltown, .	3 3 0
		<hr/> £100 0 0

The vote of £100 having been continued, was, in March 1887, allocated as follows:—

Branch.	Secretary.	Amount.
Ayrshire,	James M'Murtrie, Ayr, .	£12 17 6
Wigtownshire,	Alex. Aitken, Stranraer, .	21 6 6
Do. (Lower District),	Jas. Drew, Doonhill, .	6 15 0
Kirkcudbright,	Richd. Henderson, The Grange, .	10 10 0
Dumfriesshire,	John Henderson, Lockerbie, .	8 17 0
Upper Ward of Lanarkshire, .	James Lindsay, Eastfield, .	7 4 0
Argyllshire,	James Lothian, Campbeltown, .	2 10 0
		<hr/> £100 0 0

The secretaries of the various district branches of the Scottish Dairy Association were requested to send a report, stating what work had been done, how many had been taught, and generally what good had been done by the employment of teachers; also to point out what defects had been noticed, and to make suggestions for improvements.

The following reports have been received:—

1. *Ayrshire Branch.*

The branch again this year secured the services of Mr Drummond of Ingersoll, in Canada, to give instructions throughout Ayrshire, Lanarkshire, and Argyllshire in the Canadian system of cheese-making. His terms were £350, including Transatlantic expenses, and about £14 additional for his expenses when on duty in this country. He commenced his itinerant instructions on Monday the 3rd of May, and on the 10th of July he completed his first course of 60 lessons in the districts of Kyle, Carrick, and Cunningham, of Ayrshire. Between the 12th and the 27th of July he gave a course of 14 itinerant lessons in Lanarkshire. He then returned to Ayrshire, where he gave 6 more itinerant lessons, viz., from the 9th to the 14th of August. From the 16th to the 25th of August he gave a course of 9 itinerant instructions in Campbeltown. The instructions in butter-making were discontinued for a season. In terms of resolution of the special general meeting held at the Show of the Highland Society at Dumfries, on the 29th of July 1886, a dairy school for the counties of Ayr, Renfrew, Lanark, and Argyll was opened at Mr Cross' farm of Knockdon, in Ayrshire. The school instructor was Mr Drummond. The school was opened on the 26th of August, at Knockdon, where it remained till 3rd September, that is, 8 working days. Thereafter the school was removed to Lanarkshire, where it remained for 6 working days, viz., from 6th to 11th September, at the farm of Mr Morton, Nether Abington. Thereafter the school returned to Ayrshire. It was opened on the 13th of September, at Mr Wallace's farm of Auchenbrain, Mauchline, where it remained till 18th September, that is, 6 working days. In Ayrshire the schools were limited to members, and those who attended were charged 2s. 6d. per day, in addition to membership. In Lanarkshire members were admitted free on presenting their member's tickets, and non-members were charged 2s. 6d. per day. Neither in Ayrshire nor Lanarkshire were the pupils paid their travelling expenses. The general opinion amongst the members of the Ayrshire branch was that more good was got from itinerant instructions than from the schools. This opinion was borne out at the Kilmarnock Cheese Show of October last, when as a result of Mr Drummond's tuitions, the cheese award to Ayrshire entrants were exactly double those of October 1885. In all, Mr Drummond gave 78 practical itinerant lessons and 14 practical school lessons in Ayrshire alone. These Ayrshire lessons were attended by 663 persons, viz., 555 at the itinerant lessons, and 108 at the school lessons.

2. *Wigtownshire Branch.*

It has been found that, although the dairy school was in operation in this county for a month, it was not taken advantage of to any extent, though situated in a most central and suitable place for the district, and under the superintendence of the association's instructor.

It has also been found that practical demonstrations, at fixed centres, are not so much appreciated or taken advantage of as is to be expected they might be, or as they at one time were. The most popular, and what is considered the most practical plan, is for the itinerating instructor to call at the several dairies, see all that is being done and the cheese that has been made, and if anything is found amiss, suggest what will put the matter right. In this way a great many dairies may be got over in a very short time, as at some very little time requires to be spent. It has been found that the Dairy Association has done a vast amount of good in the past by raising the average quality of the cheese to a point never before reached, though it is also felt that an immense amount yet requires to be accomplished, and thus in the face of difficulties, as a great number, through prejudice or apathy, are not members of the association, and consequently cannot be reached through its agency. It is felt that the practical interest taken in the associations by the Highland and Agricultural Society is likely to do much towards making the efforts that are being made to embrace every dairy and every dairymen in the good work of improvement of our cheese manufacture more popular by giving it more of a national tendency. It is not easy to say exactly what good has been done, but it is found that all those who have been members of the association, and have been taking advantage of the itinerating instructors, are getting on an average from 5s. to 7s. per cwt. more for their cheese than others who have kept aloof. Of course, there are a few who were making first class cheese before, who still command as good price as any of the members, but they are the exception and not the rule. It has been expressly stated by more than one of the members that the association has been worth £100 per year to them, and this in times such as we are having is surely an immense good. Our association would wish to impress on the Society the desirability of continuing the present grant without attaching to it the necessity of starting and keeping up a dairy school, as though this might be a great good in the future, it is felt that we must turn our attention to present advantage.

Report on the Course of Instruction in Cheese-Making pursued during the Season of 1886, by John M'Master, Culterannains.

Scope Embraced.—From March till August, both inclusive, I was engaged for 108 days in inspecting dairies and instructing the managers, —my remuneration for such services being fixed at £2 per day. I attended to 124 dairies; 100 of which have subscribed to the Wig² townshire Dairy Association, and are located within the boundaries of that county; the remainder in Dumfriesshire, and connected with the existing county association. In the former, the average number of cows in one herd would be about 65 (the smaller ones being either butter-making, or averse to the outlay involved); in the latter, the average would not exceed 40. The only alteration I would suggest under this head, would be the extension of the teaching season well into October, because in autumn the process—on account of the smaller volume and greater richness of the milk, and the lower atmospheric temperature—requires to be radically changed.

System Adopted.—Dairies having easy access to a number of makers were fixed on as centres for instruction—usually two in each parish; and on the first visit, one to two days were fully occupied in going through the entire process. One day is of little value in arriving at even approximately sound conclusions, because in a strange dairy it

is almost entirely confined to comparative experiment. The condition and quality of the milk, and the effects of variety of soil, herbage, and surroundings, can only be well known by testing them; and thus only, on the second day, can the process have the consistency required. Each of the Wigtownshire dairies was visited and inspected four times during the season; the Dumfriesshire ones only twice, because of the wide distances intervening. I think, however, that many—not all—should be inspected at least once a month. When inspecting, I called attention to defects in cleanliness of utensils and the vicinity of the dairy, to the aeration and ripening of the milk, the amount of salt required for early consumption and lengthened keeping; the proper degree of acidity for removing the whey, and illustrated the different parts of the process by a cheese to which the particular remark would truly apply. My pupils generally were anxious and attentive inquirers, but especially among those who had at any time attained considerable eminence, I found it difficult to remove the prejudices of previous practice, and but for which I might have been able to report still more favourably than in the following detail.

Results.—Of the 100 Wigtownshire dairies, at least 70 made very marked improvement in quality—the proof being in the price realised, averaging at least 7s. per cwt. advance. In one large dairy there would be quite 20s. above the previous range; and in a small one, outside the influences of an instructor, but with every facility otherwise, would be 15s. below the average price obtained. The 70 Wigtownshire dairies with the best record of improvement would, for summer cheese, realise from 56s. to 63s. per cwt.; and the *lane*, said by our largest buyer to be “the best in the county,” was, previous to this year, of an inferior grade. Dumfriesshire shows at least as much advance, so that my expectations were on the whole exceeded. But 36 out of the 124 dairies to which my work extended, failed to get placed in Class L, and in the “sweepstakes” at Kilmarnock, through the introduction of a judge accustomed altogether to English and American markets. Of this I do not complain, for I believe the one referred to is a high-class judge; I only use it as suggesting that an intimation should be given early in the season as to the style of cheese required, and possibly the institution of distinct classes representing both English and Scotch tastes. I had in my instruction inclined to that giving the highest price, and it cannot be denied that it was obtained for the firmer style adapted to long keep, and suiting the Glasgow and Edinburgh markets. A good maker can produce any type of cheese, but it stands to reason that he must know beforehand what it is. I take this opportunity of pressing a view I submitted at the last meeting of the Scottish Dairy Association at Kilmarnock, viz., that the judging should be in the cheese-room, and the final test in September,—my opinion being that a small sample is not a true indication of general excellence. The increased income to be credited to the improvement noted in the 70 Wigtownshire dairies—with 4550 cows, giving 4 cwt. of cheese each, and 7s. per cwt. advance—is £6370; and if two-thirds of the “cows in calf” of the Board of Trade Returns for the county (20,940) be set down as cheese-producing, and subjected to similar influences, it would, in like ratio, bring over £18,000 per annum. It is, then, not difficult to discern a direct gain to the farmer, an indirect one to the proprietor, and warranting still greater efforts in the direction of technical education. The difference in farmer’s receipts, and consequently in rent-paying power, will in many cases reach 40 per cent. of the rent paid to the landlord. And it is worthy of note, that there was no noticeable difference in the milk referable to the higher and lower prices obtained for the

cheese, the manipulation alone being the foundation of the relative merits.

Dairy Schools are to my mind suitable for instruction in butter-making, because only a short time is occupied; there is no very nice gauge of acidity, and changes of temperature and subtleties of weather have little influence; in short, there is a uniformity all through the process unknown in cheese-making. The school can be located near a railway station, or an existing creamery utilised without prejudicing the efficiency of the instruction. It is, however, different with cheese-making. I at one time believed a dairy school having associated with it an efficient inspector, would meet all our requirements—a view I submitted to the Highland Society in 1884. But the observation and experience which I have since obtained have forced me to another conclusion. Scarcely any two dairies require the same treatment all through the process and during the whole season. But, besides, there are many contingencies which require close discrimination and exceptional treatment, and these are just what the ordinary maker may be expected to overlook. Two examples will suffice. In August I noticed that one dairy required the evening's milk to be at 60° in the morning, others ranged all the way up to 75°; the two extremes with the process altered to suit giving a similar quality of cheese. In another, where 75° was the required temperature, the acidity was so slow in developing as to demand the addition of sour whey an hour after the two meals had been mixed, and still a fair cheese was the result. The peculiarities of each farm can only be properly met on the spot, and are the strongest argument for the adoption of the mode known as itinerant instruction, whether or not aided by the dairy school. Mr Romien, the vice-president of the British Dairy Association, concurs in my view that the most efficient mode is that just stated, but adds that in every case in England the dairy school has been an entire failure. I for a time turned my own dairy into a school, and invited attendance, but I regret to state that the results were inappreciable. The main difficulty is in the meagre attendance consequent on the manipulator being hard to substitute in the home dairy. And it is evident that when my *maximum* attendance was four students, it is not—however beneficial to the few—a mode adaptable to the general wants. Both systems having thus been fairly tried, I could come to no other conclusion than that for cheese-making the dairy school *by itself* would not be an efficient mode of imparting technical education.

Suggestions for the Future.—It is evident that until a much higher general standard has been reached, an instructor should be appointed in each county or district over which his services could conveniently extend. That tenant farmers should continue their *pro rata* subscription to the associations is clear, for they derive direct benefit; but as the ultimate gain accruing from all improvement comes to the landlord in rent, he should be extremely liberal in supporting systematic instruction; and if favourable results could be put before the Directors of the Highland Society, a handsome supplement would no doubt be granted. In any case, prizes might be given for the best dairies of cheese which were open to inspection and judging during the whole season. September would be the best month for the final test, and no dairy should be admitted without a record of all the accompanying conditions and variations of process. In this way there might in the prize list be a much more powerful influence for future improvement than any by which it has yet been marked.

In conclusion, I may say my efforts were as widely distributed as

possible, and my aim was to raise the general standard of quality and price, rather than a few of the more eminent makers to higher distinction in the prize list, and as I have attempted to show, I believe I have been to some extent at least successful.

3. *Kirkeudbright Branch.*

During last season our branch paid for the services of an itinerant instructor in the art of cheese-making. No attention was paid to butter. The instructor, Mr James Smith, Standingstone, Borgue, gave 41 demonstrations on separate days at 18 different farms, and we paid him at the rate of 30s. a day, in all (exclusive of some personal expenses), £61, 10s. Further on in the season Mr Smith was again chosen to conduct a dairy school. The school was held at Kirkeoch, about two miles from Kirkeudbright, and was continued for ten days. Mr Smith was paid at the same rate as before, and received in all £15. Mr Smith is a local man, and one of the most successful cheese-makers in the district. In the course of his demonstrations at the different farms he had an average attendance of 12 each day, and at the dairy school there were 12 pupils altogether.

The third season is passed since the Dairy Association commenced work in the stewardry, and there is no question that it has done much good. It has paved the way for improvement all round by a general stirring up of all concerned in dairying matters. On the one hand, it has helped to make proprietors more alive to the necessity of providing buildings suitable for the purposes of dairy farming; and on the other, it has drawn the attention of cheese-makers to the advantage to be got from the use of improved apparatus and utensils in their daily work, the need there is for a constant and plentiful supply of good fresh water and for thorough ventilation, and for the exercise of scrupulous cleanliness in all departments, from the byre to the cheese-room. When cheese-making was first introduced to the stewardry, all sorts of buildings were requisitioned for the purposes of the dairy farm, and it is only very recently that suitable places have come to be erected. Steadings adapted for the mixed husbandry of the county, and to the somewhat scanty wants of the native cattle of the district, were with as little alteration as possible made to serve the ends of the dairy farmer, and, in the majority of cases, most unsuitable places they were. Now, however, this state of matters is rapidly changing, and already the stewardry can boast of possessing some of the most suitably planned and best equipped dairy steadings in Scotland. And previous to the peregrinations of the itinerant instructors, the cheese-makers were in the habit of using the old-fashioned milk vats or "steep tubs"—circular tubs made of tin or oak—with no other appliances in connection therewith than a spigot for drawing off the whey; but now the improved vat of rectangular shape, and with a false bottom, having steam and cold water connections, is in general use. And this, necessitating a constant supply of steam, has made the latter available for heating the dairy and cheese-room and for cooking the cows' food, in each instance more economically and thoroughly than was formerly the case.

Regarding the method of instruction adopted by our branch, it is considered by many that it has already almost served its end. Our first instructor, Mr Harris, introduced the Canadian method of making Cheddar cheese, and now it is in general practice throughout the county. It differs from the one it is supplanting in little more than that the operator, with better apparatus and utensils to work with,

has his materials much more in hand than is possible under the old-fashioned way of working. Having the temperature of the milk and curd thoroughly under control, makers under the new system have an advantage over those who may still adhere to the original method. And this is one slight advantage. It enables the operator to allow the milk and curd to develop acidity in a natural manner without his being obliged to add any extraneous matters. Makers under the old system have too little control over the temperature of the contents of the steep tub. When they wish to heat the contents, they have, previous to curdling, to add warmed milk, and, at the later stages, to draw off whey and heat it and return it to the tub. And in order to induce and hasten the development of that amount of acidity necessary to the ripening of the curd, they have to add sour whey to the contents of the vat. Under the improved system, a little steam is at the critical time admitted to the false bottom of the vat, and the temperature of the whey and curd is raised to the proper degree, and acidity at once develops, and there is no need for the addition of foreign matter, such as sour whey of some days old, certain to contain other ferments and fungoid growths than those required for the turning out of a first-class cheese. These truths are now patent to all the stewartry cheese-makers, and it is believed that they have learned all that at present is to be known in this respect, and it remains with them to modify the details in accordance with the varying nature of the soil and locality with which each has to deal. What they have to do now is to perfect the system at their own several places. There is, however, one point on which they can get no true light, and that is how to be able at once to tell when acidity has made its appearance, and how far it has gone in the contents of the vat, and on this almost entirely depends the character of the forthcoming cheese. On some farms it is much slower of development than at others; and on certain days, *e.g.*, as "hot and fiery," in July, especially where the pastures are good and the cows well done to, it is so quick that the maker can hardly get from one stage to another in time to escape the loss of his material. Had our crack cheese-makers some sure and easily understood and manipulated test, whereby to enable them to follow up the course of the lactic fermentation, they would then be near to perfection in their art. As things go, the best of them have no reliable guide to go by, while their less skilful neighbours simply trust to chance. The instructors have been able to give them no test other than the crude one of applying the curd to a hot iron, telling them that when the curd adhered to the iron, and could be drawn from it in strings, it was sufficiently sour. If Dr Aitken would put the cheese-maker in the way of a simple test which would enable him to follow up the different stages of acidity of the milk and curd with which he has daily to deal, the doctor would confer an invaluable boon on the whole fraternity, and earn the thanks of all who relish a morsel of good cheese, no matter where made or of what class.

The school was not a success. The number of cheese-makers is limited, and what was taught in the school they already had the chance of seeing and hearing at the different farms visited by Mr Smith. Had lessons in butter-making been given, the school would have been more popular on account of the greater number of butter-makers there is. Young folks are those most likely to derive benefit from school tuition, and what they want is instruction in the first principles of the art, for at home they have ample opportunity of becoming acquainted with the daily routine and hard work of the dairy; but then their number is small, there being so few openings for young cheese-makers. Established makers for most part have

neither time nor inclination to study the scientific side of their work. A school, in order to be at all popular in the stewartry, would require to embrace instruction in cheese and butter-making, and the principles of science which underlie all the operations in connection with the dairy, but even then it would be of brief duration. If we had one dairy school for the south-west of Scotland, managed similarly to those which are worked so successfully in different parts of Ireland, it would be a good thing for the country. At these places pupils are boarded at easy terms for a month or so (the lads at one term, and the girls at another), and while taking part in the everyday work, and being taught the elements of science, they have the advantage of seeing and using the newest and best implements and utensils of the dairy.

4. *Dumfriesshire Branch.*

Lessons in cheese-making were given at five different centres in the county for 11 days. Thirty-seven visits were paid by the instructor, about two months afterwards, to the members' dairies, inspecting cheeses made, and 81 persons were taught at the lessons. £36 paid as fees to instructor for year 1886. Regarding the good done by the employment of itinerant teachers, I beg to quote a few extracts from Reports from the centres and cheese-makers in the county:—Reporter No. 1—“Was very much pleased to see the improvement in the appearance of the cheese made, . . . certain that the value of cheese in the district was very considerably enhanced, though unable to quote prices. Many who thought they had nothing to learn exerted themselves to beat those who adopted the new system. At all the shows in the county, cheese made by those who had attended the classes, and adopted the system taught, took the premier places.” Reporter No. 2—“I think there is a decided improvement in the quality of the cheese made on the system as taught by Messrs Harris and M'Master, and likewise a considerable advance in price gained by adopting their system.” Reporter No. 3—“The lessons given were a decided success, so far as excellent cheese were made and careful instruction imparted. One cheese merchant, who was not in favour of the new system, had this year to declare that he had found a great improvement in cheese-making in certain districts according to the Harris method. The itinerant instructors have conferred a great benefit on the cheese-making community. And I have also the testimony of a highly esteemed medical practitioner, that in the case of his own family, as well as that of a brother doctor, that since they have been supplied with cheese made according to the improved method, they have been able to use them freely without any unpleasant results, which they were never able to do before, . . . proving that cheese made according to this method were more easily digested.” Reporter No. 4—“I cannot say there is any marked improvement in the quality of my cheese this year from former years. . . . Some of those who formerly could not make good cheese have improved; some who formerly made good cheese have been making no better, and have more spoiled cheese by the new system. My opinion is that the system taught by the instructors is better than the old one, but it is very difficult to get good makers in the old system to adopt the new, the process being much more tedious.”

5. *Upper Ward of Lanarkshire Branch.*

During last season this association had the services of Mr R. J. Drummond, cheese instructor, from Canada, a gentleman who had previously proved himself in this and other counties an excellent

teacher. He was first employed for 14 days, from the 12th of July till the 27th of July, in giving itinerant instruction. These practical lessons in cheese-making were given for two days at each of seven farms or stations and the number of people who attended ranged from 10 to 60, or an average daily attendance of 17. In addition to the itinerant instruction, the association had a dairy school, also taught by Mr Drummond, from the 6th to the 11th of September inclusive, at Mr Morton's farm of Nether-Abington, which was in every respect well suited for the purpose. At this school the attendance of pupils averaged 12 per day. With regard to the improvement in the quality of the cheese made in the district embraced by the association, as the result of the teaching, we find that it is somewhat difficult to gauge the extent of it. At the same time, it is within our knowledge that the exhibits of several of those who attended the lessons were placed first at the more important local exhibitions of dairy produce; while others were hardly less successful in securing some of the more important prizes. The teacher was also the means of introducing greatly improved cheese-making appliances, which were largely adopted. These appliances, coupled with the system of the instructor-in-general, and in particular the careful manipulation of the curd in the different stages of manufacture which he taught, gave a very important result in addition to the improved quality of the article, namely, the increased quantity of curd got from the milk compared with the yield previous to the instruction being given. This increase we have no hesitation in stating will run from 6 to 10 per cent. The lessons were also the means of drawing attention to the great importance of following a recognised rule or method in the dairy, and showing the impossibility of making good cheese in a haphazard or rule-of-thumb manner. Among the hindrances to improved dairying may be mentioned the want of suitable dairy accommodation at a great many farms. From this cause many of those who are anxious to move with the times, and compete with those who are more favourably circumstanced in this respect, find themselves heavily handicapped. It is, however, matter of surprise that so good results are obtained under the conditions mentioned, and we think this proves that the indifferent and poor premises, which are far too common, are perhaps the greatest drawback to improved methods of dairying being more generally followed. There is no doubt the low prices current for cheese during the last two seasons tended much to lessen the interest in their manufacture, and likewise induced as many farmers as could procure even an indifferent price for their milk, to sell it rather than risk a worse sale for the manufactured article. But now that prices have recently risen considerably it is not unreasonable to expect that the cause referred to will not operate during the coming season. In fact, it is more than probable, considering the unremunerative prices obtained for other farm products, that a reaction will take place in favour of making a larger quantity and a better quality of cheese. In considering what means associations should take in order to increase the interest in dairying, with a view to further improve the qualities of both butter and cheese, we are not sanguine that we can suggest anything of much practical value. Up till now the itinerant instruction has been found to work very well, and we have little doubt it would continue to do so. It is, however, increasingly difficult to get stations for the instructor to teach at, by reason of the inconvenience and trouble those granting their premises are put to in consequence of the considerable attendance of people. Compared with the school system, the itinerant instruction is in many respects superior, only for the

reasons given it may be found necessary to discontinue it. In that case arrangements might be made for schools at centres convenient for trains, and the hour of meeting so fixed that pupils could go in the morning and return home the same day, even to considerable distances. Should a sufficient attendance of pupils be assured to warrant an experiment such as this, we see no reason to doubt its utility.

6. *Argyllshire Branch.*

This branch has a membership of 55. By an arrangement with the Central Association at Ayr, Mr Drummond, dairy instructor, was engaged, and during the month of July he taught at various dairies in the district, giving nine lessons in all. On each of these occasions there was a large attendance, nearly every member being present at one or other of the places, and some of them oftener, besides others, non-members. In order to show the good arising from the branch's efforts in this way, it should be mentioned that the winner of the first prize at the local Produce Show here in October last (ten best cheeses) was never successful before under the old system, and he now attributes his success to his having followed up Mr Drummond's instructions. Greater attention is being given now to the whole work of cheese-making. Those in charge of dairies are paying stricter regard to the utensils, cleanliness, storage, and generally exactness and method is resulting from the efforts to introduce Mr Drummond's system. An objection to the old system was the adding of sour whey to the milk in order to bring up the acidity—the state of the whey being always uncertain and unsatisfactory from atmospheric and other causes—and not always a pure acid. Instead of this being so now, the milk is allowed longer time in maturing, and the rennet is added at a higher temperature; the curd being removed from milk tub immediately it is fit to be so, the injurious effects to it from its being allowed to remain for some time in the whey is lessened. Formerly they were allowed to remain together too long, and the curd was not always sufficiently drained off the whey.

IV. WORKING DAIRY.

A working dairy at the General Shows has been in operation at Edinburgh in 1884, Aberdeen in 1885, and Dumfries in 1886, at each of which demonstrations in butter and cheese making have taken place. An account of the working dairy at each Show has been already published in the *Transactions*.

SANITARY PRINCIPLES APPLIED TO THE CONSTRUCTION OF FARM BUILDINGS.

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"To prevent is better than to cure" is a maxim that receives universal assent. Moreover, we may be sure that there never was a time, in the history of mankind, when its truth was not recognised, and at the present day it would receive as ready assent among savage as among civilised communities. On the

other hand, the belief that the majority, not to say the whole of the diseases that afflict men and animals are preventible is of comparatively modern origin, and even among civilised communities it cannot yet be said to have received universal acceptance. It is not, like the maxim above quoted, a self-evident truth, for it requires, on the part of those assenting to it, a knowledge of the causes of disease. There are, unfortunately, still many diseases the causes of which have not been certainly ascertained: but knowledge in that direction is being steadily advanced, and day by day it is being borne in upon those whose business it is to study disease, that by far the greater number of maladies, whether of man or the lower animals, are brought about by conditions and circumstances that are avoidable. Sanitary science is the outcome of the recognition of this fact. It devotes itself, in its widest sense, to the elucidation of the various factors in the causation of disease, and to the devising of means by which these causes may be altogether avoided or held in check. Its aim is the maintenance of health, as is expressed by the very word *sanitation* (Lat., *sanitas*, health), and by its synonym *hygiene* (Gr., *hygieinos*, good for the health).

The application of sanitary laws to the management of the domesticated animals has already done much to keep down disease, and thus to conserve the national wealth, but a great deal more has yet to be done in this direction. A vast saving has been effected to the present generation of stock-owners, and indirectly to the nation at large, by the application of energetic measures in the way of preventing, suppressing, or holding in check the contagious maladies that are ever ready to decimate our flocks and herds. It was no doubt natural that sanitary science, as applied to the lower animals, should in this direction find its first and chief application; but it is questionable if a neglect of sanitary principles at the present day does not entail, through diseases that are not epizootic, and which, therefore, strike us less, a greater annual loss than that which ordinarily results from epizootics. Should a stock-owner in one season lose 20 per cent. of his animals from some contagious disease, he instantly recognises, and never afterwards forgets, the imperative necessity of taking steps to avoid a recurrence of the plague. On the other hand, he often regards with composure an annual mortality of, it may be, as much as 5 per cent. among his animals from what he would call ordinary diseases, although the accumulated loss from such diseases may in the course of a lifetime far exceed his loss from contagious maladies. When the amount of this accumulated loss has been fully brought home to stock-owners, the present field of veterinary sanitation will receive a great extension, and a great annual saving will be effected to the nation.

If any one seeks to compare the range of application of what we may call human and veterinary hygiene at the present day, he can hardly fail to be struck by the different amount of care bestowed on the construction of human dwellings and those for the domesticated animals. By this is meant, not care devoted to securing mere bodily comfort, but care taken to obviate whatever is calculated to impair health and predispose to disease. In this essay an attempt will be made to show the bearing of the laws of health on the construction of farm buildings; and, for convenience, the subject may be treated of under the four heads—Site, Materials, Drainage, Ventilation.

Site.

It is true, unfortunately, that even in an unsettled country there is seldom perfect freedom in choosing a site, in the determination of which such considerations as centrality, convenience of access to public roads, and water supply, have always to be taken into account; but, from a sanitary point of view, the site of a farm building ought to be selected chiefly with the object of avoiding cold and damp. There can be no question of the desirability of avoiding these, for whether taken together or separately, they are important factors in the production of certain diseases, such as rheumatism and affections of the organs of respiration.

It is a great advantage to have a site sheltered from the prevalent cold winds. In this country a southerly or westerly exposure is, therefore, to be preferred. The site should always have sufficient elevation to secure a ready fall for drainage, and it ought never to be a hollow into which the surrounding area naturally tends to drain itself. Again, a site on clay, marl, or alluvial deposit is to be avoided, as being nearly always damp. A gravelly soil is, from this point of view, the best, and one might say that a sheltered, gravelly hillock would be an ideal site, as it would not only be sheltered, but naturally dry.

But the weight that has to be given to other considerations may make it impossible to get a naturally dry site, in which case it must be thoroughly drained to carry off the subsoil water. The drains ought to be made from 12 to 18 feet apart, and from 4 to 6 feet deep, if the fall will permit. The surface drainage of the surrounding ground should be attended to at the same time, with the view of intercepting the surface water and diverting it from the site. To secure the dryness of the foundation, a pipe drain may be laid round the building a little below the level of the foundation, and covered to the surface level with broken stones. In every case (though this hardly comes under the present head) roof water should be caught in rain pipes and thus prevented from soaking into the foundation.

Materials.

Here again, just as with the site, sanitary principles have in practice often to stand aside for other considerations, the chief of which is cost. But that must not deter us from stating what are the qualities that ought to guide us in the choice of materials, when our object is to erect a building that will in the greatest measure preserve the health of its inhabitants. When that is our standpoint, we may recognise that a trifling, or even a considerable, excess of outlay at the beginning may be real economy in the end.

Walls.—The value of materials for the walls depends upon the extent to which they satisfy the three following conditions:—(1) The walls must secure the warmth of the building, (2) they must be dry, and (3) their inner surfaces must be non-absorptive, and capable of being easily cleansed and disinfected.

On the first and last of these heads, wooden walls are inferior to those of stone or brick. These again vary among themselves, chiefly in their degree of porosity. Where that is excessive, as with some kinds of brick and sandstone, the walls are certain to be damp, and consequently cold. The first and second of the above conditions are admirably satisfied by such materials as granite or whinstone. In all cases it is a good plan to lay an impervious stratum of asphalt between the foundation and the wall.

The most important of the three conditions, however, is probably the last; but it is generally the one that receives least attention. Let us consider the case of a building in which there have been standing a number of animals affected with some contagious or infectious disease—glanders, for example, or swine fever. The exhalations or excreta of these animals contain in countless myriads the specific germs of these diseases. These germs float in the air, and are apt to find lodgment on any part of the walls, and to be carried into the minutest crevice or pore of these walls. In the case of some disease germs, it is known for certain (and it may be true of a great many others) that they may lie dormant for a long period of years, and thereafter become active, when, by any circumstance, such as the crumbling of a piece of brick or mortar, they are set free from their resting-place, and gain entrance to the system of a suitable animal. We need not wonder, therefore, that it is sometimes almost or quite impossible to disinfect a building; and cases are actually on record where again and again a particular disease has broken out in a building, defying every attempt to eradicate it, short of taking down and rebuilding of the walls. Recent investigations have shown that in the case of some disease germs measures of disinfection in which we had been accustomed to place great confidence are practically useless. In every attempt

at disinfection, the first step ought to be the cleansing away of all discoverable dirt, and hence the advantage of constructing walls with non-porous, smooth surfaces. The best, but most expensive, method of effecting this is to construct the wall with an inner lining of vitrified or glazed brick, which gives a surface that is practically non-porous, and capable of being cleansed perfectly with the minimum of trouble. A tolerably efficient substitute for this is to coat the inner surface of an ordinary brick wall with silicate varnish, or the so-called sanitary paint. This is applied in several coats like an ordinary paint, and it speedily sets into a hard glassy varnish. The surface of the wall is thereby rendered non-porous and washable. When of good quality and properly applied such a coating will wear for many years. It does not adhere well to wood, but its use is to be commended for plastered or cemented walls.

Where walls are finished roughly on the inner surface, as they frequently are in the case of ordinary farm buildings, it is difficult to employ this paint in an effective manner. For such as these, a good coating of lime-wash is better than nothing, for although it leaves the surface still porous and irregular, it gives an outer skin which is easily removable, and easily replaced by a similar one when a necessity for cleansing and disinfection arises.

Roof.—What has just been said of the materials for the walls applies, for the most part, to roofing materials, and therefore little need be said under that head. It is hardly necessary to say that a straw or thatch roof possesses, in a marked degree, the properties that ought specially to be avoided in what may be called a sanitary roof. To disinfect a building with a thatch roof is impossible.

Floor.—A sanitary floor is one that is impervious to moisture and easily cleansed. Any floor in which either of these two qualities is absent is an insanitary floor, and such a floor would, from a hygienic point of view, vitiate a building perfect in every other requirement. Insanitary floors are, as yet, the rule, rather than the exception, in farm buildings.

From a sanitary point of view, an earthen floor is the worst conceivable kind of floor. In the first place, it gets saturated like a sponge with the urine and faeces, and reeks with ammoniacal and other gases, which maintain the atmosphere of the building in a vitiated state. This is an objection that holds good at all times; but whenever a building with such a floor becomes the scene of an outbreak of some epizootic affection, it is needless to say that the floor becomes, not merely a receptacle for the germs thrown off from the bodies of the diseased animals, but actually a soil in which these germs may multiply. It is just as impossible to disinfect an earthen or other kind of porous floor as it is to disinfect a

a thatch roof. A floor that is but little superior to an earthen one, is one paved with stones or common bricks set in sand or earth. The joints in such a case represent just so much of an earthen floor, and, besides that, common bricks are themselves very porous. Floors like these are, therefore, to be avoided, because they fail to satisfy either of the essential conditions of a sanitary floor.

Another variety of floor that fails in one of the essentials is a wooden one. Wood is sometimes employed for the flooring of stables, in the form of square blocks set in pitch, such as are used for street-paving. This forms, in many respects, an agreeable floor, and it appears to wear tolerably well. It is comparatively noiseless, it is not slippery, and its surface is easily swept clean of solid dirt. It is needless to say, however, that it is strongly absorbent of urine, and on that account it must be condemned.

There is no lack of substances that will make a floor that is impervious to moisture and easily cleansed; but, unfortunately, the number of substances at our disposal for stables and cattle buildings, but more especially for the former, is considerably reduced, when the question of durability is taken into consideration. For stables, granite or whinstone blocks, set in cement, make a most durable floor, and one that satisfies fairly the other essential conditions. Of recent years, asphalt, cement, and concrete have been largely used for the flooring of stables. All of these give a surface that is impervious and easily cleansed, but in many cases they prove unsatisfactory on the score of durability. This, it need hardly be said, occurs most frequently in the case of stables for heavy draught horses. Nothing seems more variable than the quality of these substances, as laid down by different firms. We have seen stables laid with one or other of these materials that had to be re-floored within a very few years. Incomparably the best flooring that we have seen, in respect of all three qualities—durability, imperviousness, and facility for being cleansed—is Stuart's granolithic. In respect of being impervious to moisture and easily cleansed, it leaves nothing to be desired, and when properly laid down it appears to be as hard as granite and to have no tendency to crack. The one drawback connected with its employment is, that it is slippery. It cannot, therefore, be safely used with a plain surface, and it is not free from danger in this respect even when grooved with parallel grooves. It ought to be grooved in a diamond pattern or with intersecting lines, in imitation of the joints in an ordinary brick floor. It is laid about four inches thick, and in all cases, except where it is laid on wood, it ought to rest on a thick bed of broken stones and concrete. Various kinds of hard burnt-bricks are also in use for paving, and when

set in cement they make, at the outset, a good floor, but for stable purposes they fail in respect of durability. For the flooring of other farm buildings—byres, piggeries, or kennels—less resistant materials than those required for stables may serve the purpose, but we can conceive of nothing better, from a sanitary point of view, than granolithic.

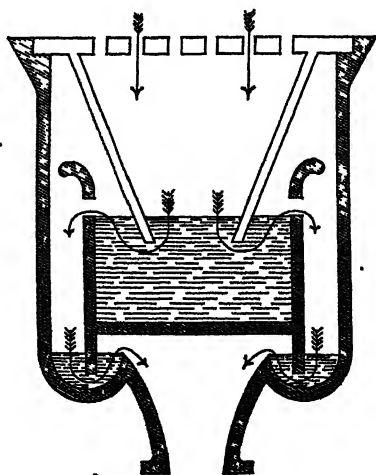
Drainage.

By the word drainage we here mean the method of conducting the urine of animals out of the building in which they are confined. Two essentially different methods of effecting this are in use; and these may be distinguished as (1) the open drain system, and (2) the underground drain system.

In the open drain system the urine is conducted out of the building by a series of surface ruts and gutters, the main gutter or channel debouching through the wall of the building into the outer air. In the system of underground drains the urine is conducted by the shortest possible route into an underground drain, entrance to this drain being effected through a grating at the centre of the stall, or immediately behind it, in the case of a stable. This drain passes through or beneath the foundation to the exterior. The former of these methods is incomparably the best, and the latter ought never to be adopted except as a matter of necessity.

The main objections to an underground system of drainage are (1) that the noxious gases evolved from the decomposing urine and faeces in the drains are apt to find their way back into the building; (2) that there is a risk of the drains becoming choked up, an accident which may necessitate the expensive and troublesome process of lifting and relaying a large part of the floor; and (3) that it is an extremely difficult matter to disinfect these drains after they have been contaminated with the urine and excreta of animals suffering from a contagious or infectious disease. In some cases, but rarely in the case of farm buildings, underground drains are a necessity, as in towns, for example, where a stable or byre is not surrounded by a courtyard, and where, accordingly, the discharge of urine through the outer wall by an open drain would not be permitted. It is therefore advisable to consider how far the risks in connection with this system may be minimised. In the case of a stable, for example, the floor of each stall should be gently inclined from front to rear, and from each side towards the mid-line of the stall. Along this mid-line, in the case of a cement or granolithic floor, there should be made a surface rut or groove, and from that there ought to proceed on either side other ruts with a slight inclination towards the front end of the stall. By means of this "herring-bone" pattern of miniature surface

drains, the urine flows into a shallow gutter running behind the stall or series of stalls, which conducts it into the underground drain through a perforated grating. This plan is always to be preferred to the method of conducting the urine to an opening at the centre of the stall; and even in the case of loose boxes it ought to be followed if possible, for, as will be mentioned immediately, it is very important that the underground drain should be regularly flushed, and that is less likely to be done if the grating is concealed under the bedding. The mouth of the underground drain ought invariably to be trapped,—that is to say, there ought to be not merely a grating to intercept straw, dung, &c., but, combined with this, a contrivance for preventing the reflux of gases from the drain. A very efficient “trap” of this nature is Clark’s patent, the plan of which will be understood from the accompanying diagram. This comprises an



outer cylindrical vessel, from the bottom of which the drain pipe commences. It is very important that the drain pipe should join the bottom of the trap and be continued without any abrupt bend, which would interfere with the passage of a brush along the drain, should it become choked. The circumference of the bottom of this outermost vessel has the form of a circular trough, which always remains filled with liquid. Fitting into this outer cylindrical part of the trap there is another of slightly smaller diameter. The bottom and sides of this second vessel are closed, except near the top of the latter, where there is a row of perforations. The bottom of this inner vessel is provided with a kind of flange, which rests in the trough of the outer vessel, and is therefore immersed in water.

A perforated grating covers the trap at the surface of the floor, and to its under surface there is attached a kind of funnel, the lower opening of which projects into the liquid contained in the inner vessel. When the urine filters through this grating, it falls into the innermost vessel, and from that it flows into the outer vessel by the perforations near the top of the first. From the outer vessel it flows away by the drain pipe. In the diagram the curved arrows on each side denote the course of the urine, and also the position of the two strata of liquid intended to prevent any reflux of gas from the drain pipe. When solid matters pass through the grating, they fall to the bottom of the innermost vessel, from which it is intended they should be regularly removed, by taking off the grating, lifting out the inner vessel, and emptying it. It is very important that this or any similar trap should be flushed once a day, for if this is not done the liquid in it soon comes to be practically undiluted urine, which speedily decomposes, and gives off an offensive odour.

The underground drain ought to pass without any bend through or beneath the foundation, and here, by means of another trap, it ought to be connected with a main drain or sewer. Should the stable drain, through neglect of flushing or other circumstance, become choked, a brush can then be passed through it from the stable floor to the outside. The trap where the stable drain joins the sewer should invariably be ventilated to the outer air, and thus sewer gases are prevented from flowing back into the stable.

The underground drain ought always to be constructed of impervious materials, to prevent leakage of the urine and consequent saturation of the surrounding soil. When the trap is being cleaned out once a day, the drain ought to be at the same time flushed with several pailfuls of water. If these points be attended to, the evils of the underground system will be reduced to a minimum.

In the open drain system, a series of surface ruts precisely similar to those above described collects the urine from each stall, and discharges it into a gutter behind the stalls. This, however, instead of conducting the urine into an underground drain, leads it through the outer wall of the building into the open air, where it may be discharged into a trapped drain, or conducted to a collecting tank if desired. The superiority of this method in respect of cleanliness and diminished risk from infection is apparent, and need not be dwelt upon.

These methods have been considered in their application to the case of stables, but what has been said applies equally to cattle buildings or pig-styes.

It is perhaps not out of place, in concluding this part of the subject, to say that scrupulous care ought always to be taken to

guard against any possible contamination of the water-supply of a farm steading by urine, or liquid from midden-seats.

Ventilation.

Ventilation may be defined as the provision for diluting, by means of currents of pure air, the exhalations from the lungs and skin and the effluvia from the excreta of animals in a confined space, to such a degree that the air of that space may continue to be respired without detriment to health.

Statistics prove that among human beings the death-rate (when taken over large areas) is proportional to the density of the population. Extreme density of population is constantly associated with impurity of air from overcrowding and defective cleanliness, and generally also, it must be admitted, with insufficient food. But even when full weight is given to this last factor, the conclusion is inevitable that, just in proportion as ventilation is defective in human dwellings, the death-rate among human beings is increased. There cannot be the least doubt that the same is true of the death-rate among the domesticated animals. The entire evidence of those whose attention is directed to disease among these animals bears out the fact that, as with human beings, overcrowding and defective ventilation have, for a constant concomitant, a high death-rate. It need hardly be said, that with this high death-rate there is a corresponding augmentation of the sick-rate.

When we seek to discover the particular diseases to which this high death-rate is due, it is found that with defective ventilation there is (1) a greater prevalence of chest diseases, such as bronchitis, pneumonia, &c.; and (2) that there is a greater prevalence of contagious and infectious diseases, such as tubercle and glanders. It is not, as was once erroneously believed, that overcrowding of animals can originate these last diseases, but when once a contagious or infectious disease obtains a footing in an overcrowded building or locality, it finds in the close proximity of the diseased and healthy, and in the diminished vigour and lessened resistance to disease which overcrowding entails, the very conditions that favour its spread. It is in this way that glanders spreads with such extraordinary rapidity in the holds of ships. Moreover, apart from the increased death-rate brought about by the greater prevalence of these particular diseases, there is among animals confined in overcrowded and ill-ventilated buildings a greater proportion of deaths from all other diseases, due not to a greater prevalence of these diseases, but to an increased fatality of them when affecting animals with enfeebled systems and diminished recuperative power.

We do not possess any accurate information regarding the

death-rate among the domesticated animals, but there can be no doubt that it is very high; and, judging from the great effect that has been produced on the rate of human mortality where improved ventilation has been carried out, we may indulge the most sanguine hope that a like result would follow the application of similar processes to the houses in which we confine the lower animals. It is a very small minority of such buildings that are at all efficiently ventilated at the present time; and there is probably no exaggeration in saying that the application of correct principles of ventilation in constructing farm buildings would, by preserving health, do more to conserve the national wealth than all the resources of veterinary science can do by curing disease. An attempt will here be made to set forth in outline what are the correct principles of ventilation, and it will be necessary, in the first place, to refer to some points in connection with the air.

The composition of what we may call a normal or pure atmosphere is shown in the following statement:—

Oxygen,	. . . . .	20 60
Nitrogen,	. . . . .	77 90
Aqueous vapour,	. . . . .	1 46
Carbonic acid,	. . . . .	0 04
Ammonia and ozon,	. . . . .	traces
		<hr/>
		100 00

These figures indicate the percentage of each ingredient by volume or measurement. The air that we breathe is thus mainly a mixture of oxygen and nitrogen, in the proportion of about 1 of the former to 4 of the latter, and a sample of air taken from any part of the globe would not be found to differ materially from the above analysis, so far as these two chief ingredients are concerned.

The oxygen of the air is essential to animal life. In the higher animals it is drawn by the air passages into the lungs, and it there combines with the blood, by which it is carried to every part of the body. As the blood circulates through the body, it surrenders its oxygen to combine with the waste carbonaceous matters of the fluids and tissues. The result of this combination is that heat is generated and carbonic acid produced, in the same manner as when carbon is burned in the air. The carbonic acid is carried back to the lungs, and given out in the expired air, while the heat serves to maintain the temperature of the animal body.

The nitrogen of the air, although the chief ingredient in respect of volume, is in another sense the least important component. This gas has no physiological action. It is, in fact, a gas of negative properties, and its chief use is to

dilute the atmosphere. It is drawn into the air passages along with oxygen during respiration, and is breathed out again unaltered.

Carbonic acid has a far greater importance in the atmosphere than is indicated by its proportion. It has two main sources, viz., the respiration of animals and ordinary combustion. It is a poisonous gas, an atmosphere containing 10 per cent. of carbonic acid rapidly proving fatal to animals, but very much smaller proportions are highly injurious when inhaled for any length of time. As has already been stated, the respiration of animals and the combustion of fuel over the whole globe are constantly adding large volumes of carbonic acid to the air, and hence the atmosphere would soon become loaded with this gas in a proportion that would be poisonous to animals, were there not some counteracting agency. Plant life is this agency, for under the influence of sunlight the green parts of plants have the power of decomposing carbonic acid, retaining the carbon to build up their own tissues, and returning the oxygen to the atmosphere. Under the operation of these counterbalancing agencies, the proportion of carbonic acid in the whole atmosphere remains practically constant. In samples of air taken from the open country there are from 3 to 4 volumes of carbonic acid in 10,000 of air, and even in the air of the closer parts of our great cities samples taken from the streets seldom contain more than 5 parts in 10,000.

The aqueous vapour of the atmosphere is more variable in its proportion than any of the other ingredients. The amount of it is very different at different times and places. At a given temperature the air can take up a definite proportion of the vapour, and when it contains the maximum proportion the air is said to be saturated. If the temperature be raised, an additional amount is required for saturation; and if the temperature be lowered, part of the vapour condenses into the liquid form. In general, the atmosphere contains from one-half to three-quarters of the maximum proportion for the particular temperature. When the point of saturation is approached, the atmosphere becomes oppressively moist; and when, on the other hand, there is only a very small proportion of aqueous vapour in the air, a sensation of irritating dryness results. Save in this respect, it is not important as regards respiration.

The proportion of ammonia in pure air is infinitesimal, there being in general not more than one part in a million of air. The chief source of it is the decomposition of animal and vegetable matter at the earth's surface. In the proportion in which ammonia occurs in a pure atmosphere, it is of no importance from the present point of view.

Ozone is regarded as a peculiar modification of oxygen. It is

formed when an electric spark is passed through the last-named gas, and its natural source may be atmospheric electricity; but perhaps it is to some extent evolved by growing plants. It differs from oxygen chiefly by its greater tendency to combine with oxidisable substances, and in virtue of this property it acts as a natural disinfectant and deodoriser, attacking and burning decomposing organic matter. It is most abundant in pure country air, but in the atmosphere of cities it can scarcely be detected, presumably because it is there speedily used up in the oxidation of decaying organic matter.

The foregoing gases may be termed the normal ingredients of the atmosphere, but there are other things which, although from their nature they must be regarded as accidental components, or impurities, are nevertheless well-nigh constant in every sample of air. Among these may be mentioned solid particles or microscopic dust. For example, any large sample of air from ordinary places contains particles of mineral dust, or of animal or vegetable tissues. In cities, the most abundant of these impurities are microscopic particles of carbon, resulting from the imperfect combustion of fuel. These are carried up into the atmosphere as smoke, and become so generally diffused that the lungs of those who breathe for any considerable length of time the air of a city become actually pigmented by a deposit of soot particles in their interior. Since the average duration of human life exceeds that of any of the domestic animals, the pigmentation is observed in greatest degree in the lungs of men and women; but it is often very pronounced in the case of horses, dogs, and cows. But there are solid particles of quite another nature than these, which within recent years have been shown to possess great interest and importance, viz., minute living organisms, or germs as they are often called. The ubiquitous distribution of these living organisms is proved by the certainty with which all organic matter undergoes putrefaction or some similar decomposition or fermentation, unless special precaution be taken to prevent the access of ordinary atmospheric air, for these processes are brought about by the growth and multiplication of living germs in the decomposing substances. The internal parts of the bodies of living animals and the tissues of living plants, in the healthy state, do not contain any of these germs; but whenever such parts are exposed to the outer air, some of the minute omnipresent organisms settle on them, and serve as the seed of what soon becomes an abundant crop. This is how we account for the souring of milk, the moulding of bread, the fermentation of beer, and all similar phenomena. Moreover, it is generally through the atmosphere that the specific germs of infectious diseases pass from the diseased to the healthy animal.

Although the general truth of these statements has been accepted for a considerable period, it is only within the past few years that refined methods of experimental investigation have been devised to give us accurate information concerning the actual numbers of these living germs in particular samples of air. Chemical analysis fails to give any evidence of their numbers, nor could we expect to be able to estimate their abundance by mere microscopic examination. But now we can take a definite quantity of air and pass it through a liquid specially prepared so as to make it a highly suitable soil for the growth of these organisms, and in passing through this liquid the atmospheric germs are caught and retained. This liquid, when spread out in a thin transparent layer, and rendered solid by the previous addition of gelatine or other similar substance, secures the germs in position in the artificial soil, and if the temperature be suitable each germ will speedily give rise to a little crop that will be detectable with the naked eye. The application of this or some similar method shows that the number of atmospheric germs in a certain definite quantity of air is very different at different places, and also in the same place at different times. Regarding these bodies as impurities of the air, it is found that the purest air is that of mountain tops and of mid-ocean, that germs are more abundant in town air than in the air of the country, that they are more abundant inside inhabited houses than in the outside air, and that they are most abundant in houses that are badly ventilated. Air that is rendered impure by overcrowding of men or animals contains such germs in relatively enormous numbers. Fortunately, the great majority of these organisms, which are inhaled in countless numbers daily in even a tolerably pure atmosphere, are quite innocuous to animals; but the important point is, that the conditions which are favourable to the propagation of the harmless species are probably equally favourable to the development of the hurtful varieties, and it is impossible to escape the conclusion that such highly favourable conditions are found where animals breathe an atmosphere rendered impure by their own vital processes.

Other occasional ingredients of the atmosphere which, like the preceding, must be regarded as accidental impurities, are various gases generated in factories, smelting furnaces, and the like, and foetid compounds resulting from the decomposition of animal or vegetable remains.

A very striking feature of the atmosphere is the comparative uniformity of its composition over the earth's surface, notwithstanding the constant tendency of particular agencies to produce local inequalities of composition. When we consider, for example, the enormous volumes of carbonic acid that are daily added to the air of our great cities, we can hardly help wonder-

ing how it is that this particular gas does not soon reach a poisonous proportion in the atmosphere of such localities.

There are two great agencies that tend to obliterate such local inequalities of composition. The first of these is the diffusive power of gases. In virtue of this property, gases mix in opposition to the law of gravity. If, for example, we take two jars, one filled with carbonic acid and the other with the lighter gas oxygen, and connect them mouth to mouth, with the carbonic acid jar undermost, an interchange of gases from jar to jar immediately sets in, and proceeds until there is a uniform mixture of carbonic acid and oxygen in both jars. Moreover, this diffusion also proceeds rapidly through partitions of porous material, such as unglazed earthenware, plaster, or brick.

The second agency is that of actual air currents. When air has its temperature raised, its volume expands, and it becomes lighter. Again, when air takes up aqueous vapour, it expands. Hence, whenever the atmosphere anywhere has its temperature raised, or has water vapour added to it, it tends to rise, while the surrounding air flows in to take its place. According to the rapidity of this expansion, and the extent of the atmosphere affected by it, there are produced air currents of various degrees of velocity, from a scarcely perceptible breeze up to a violent hurricane.

It is of paramount importance, in connection with ventilation, to inquire what is the precise influence of animal life on the surrounding atmosphere. And first in point of importance stands the change that is effected in the composition of a normal atmosphere by the process of respiration. The effect on the three chief gaseous constituents is shown in the following statement:—

	Oxygen.	Nitrogen.	Carbonic Acid.
Pure air contains . . .	20.81	79.15	.04
Expired air contains . . .	16.033	79.557	4.38

It thus appears that the air which an animal breathes out differs from that inhaled (in a pure atmosphere) by containing one-fifth less oxygen, and 100 times more carbonic acid, while the amount of nitrogen remains practically unchanged. There is also a marked addition of aqueous vapour. In fact, expired air contains aqueous vapour to the point of saturation; and hence, when the temperature of this air is lowered by meeting with the outer air, some of the watery vapour condenses, and renders the breath visible like a jet of steam. Traces of ammonia are perhaps also added to the expired air. Lastly, organic matter is always added. When air has been repeatedly inhaled, this organic matter is perceptible by the sense of smell; and by causing the expired air to bubble through water, there

is formed a putrescible liquid, which speedily acquires an offensive odour. The exact nature of this material is not known. It is almost certainly not gaseous, but composed of minute particles. It does not diffuse readily, as gases do: on the contrary, it clings to such objects as walls, woodwork, and woollen or other fabrics. Whatever its actual nature, there is no doubt that it is the most deleterious ingredient in expired air. It is much more harmful than the 4 per cent. of super-added carbonic acid. Carbonic acid in the proportion of 1 per cent. of the atmosphere may be inhaled without appreciable effect, if it has been generated in a state of purity by some chemical process; but if carbonic acid were raised to that proportion by animal respiration, the air would be highly injurious for further respiration. From this it is inferred that it is not the carbonic acid *per se* that is chiefly hurtful in the expired air, but the organic matter that is associated with it. It would be difficult to estimate the proportion of this added organic matter in any sample of vitiated air; but since the addition of carbonic acid proceeds side by side with the addition of the organic matter, *we may take the easily-estimated carbonic acid as a measure of the amount of organic matter, and of the degree of vitiation of the sample of air containing it.* Experience has proved that when the air of an apartment has had its carbonic acid raised to the proportion of 8 parts in 10,000 by the respiration of animals, the further respiration of that air is decidedly injurious to health.

The temperature of the atmosphere is usually lower than that of the animal body, and therefore the temperature of the inspired air is raised during its sojourn in the air passages. When the temperature of the air of an apartment is about 60° or 70° F., the temperature of the expired air is about 95° F. The respiratory process, therefore, tends to warm the air of a building, and the breath in consequence of its expansion tends to rise, while air from the sides and below flows in to take its place.

The influence of respiration on the air of a confined space may be summarised thus:—Its temperature is raised, its specific gravity is diminished, its oxygen is diminished, while its carbonic acid is proportionally increased, it becomes loaded with watery vapour, and highly deleterious organic matter is added to it.

But there are other influences besides the respiratory process that ought to be considered in their effect on the air of a building in which animals are confined. One of these is the activity of the skin. Watery vapour is constantly being exhaled from the skin into the surrounding atmosphere. The amount of this exhalation varies greatly according to the activity of the glands of the

skin, and the degree of humidity of the atmosphere. No reliable estimate of the amount of this addition has yet been made in the case of the lower animals, but it is probably greater than the amount added by the breath. And it must not be supposed that this exhalation of water from the skin is confined to such times as an actual moisture or perspiration is detectable on the skin or hair. On the contrary, it proceeds constantly as an insensible vapour. This exhalation is not important as a vitiating product, but it leads to the expansion and consequent upward motion of the surrounding air. It is believed that some oxygen is absorbed by the skin, and that some carbonic acid is exhaled; but the amount of this change is insignificant as compared with that effected by the lungs. Certain volatile secretions which are discoverable by the sense of smell are also exhaled by the skin, and these have generally distinctive odours in different species of animals. Lastly, it should be noted that mere contact of the surrounding air with the warm skin tends to raise the temperature of the air, and thus to determine its ascent.

Impurities are also added to the air of a building from the alimentary canal of the animals contained in it. Chief among these are carbonic acid and sulphuretted hydrogen, the latter of which is a very poisonous gas. The amount of such gases thrown out from the bowel varies greatly, depending mainly on the composition of the food and the mode of performance of the digestive functions.

The dung of the animals must always be regarded as a vitiating agency, no matter how clean the stable, byre, or kennel may be kept. It ought always to be removed as soon as possible, for it gives off offensive gases, and tends to load the surrounding air with organic impurities. In the same way urine is a contaminating agent. It is so to only an insignificant extent if it is at once allowed to flow away; but when retained it speedily undergoes fermentative changes, leading to the formation of injurious ammoniacal compounds. Decomposition of the urinary mucus also adds organic particles to the air.

If a dog, a horse, or other warm-blooded animal were enclosed in an air-tight compartment, death would soon ensue, for each respiratory act adds 4 per cent. of carbonic acid to the volume of air drawn into the lung. By the time that the animal had been once over the total air, the proportion of carbonic acid in the whole compartment would be 4 per cent.; and since such an atmosphere is poisonous in virtue of the carbonic acid alone, the animal would soon succumb to carbonic acid poisoning. But though a horse were confined in a stable without any aperture except the door by which he entered, it may safely be said that he would never die from carbonic acid poisoning. Moreover, the

carbonic acid would never reach to anything like 4 per cent., for the air of the apartment, through the heating effect of the breath and the skin, would soon be rendered much lighter than the outside air. Currents and counter-currents through the door, or the chinks in it, would therefore immediately set in, and tend to restore the equilibrium between the inside and the outside air. Thus at one part there would be an outflow of the heated and vitiated air, and at another there would be an inward current of cold, pure air. Moreover, besides such actual air currents, diffusion through the walls of the stable would also be in operation, for even through ordinary walls of stone or brick and mortar gases can, and do, diffuse. The amount of interchange between the inside and outside air through diffusion, however, is quite insignificant where, as previously recommended, walls are constructed with an inner lining or coating of an approximately impervious character. Although the horse in this supposed case would never succumb to carbonic acid poisoning, he would certainly suffer seriously. Every tissue of his body would have its function hampered, and the tone of the whole system would speedily be lowered. He would be rendered vastly more liable to contract many diseases, and when he did become attacked, his chances of recovery would be greatly reduced; and this would be the result of the continued inhalation of an atmosphere containing not merely an excess of carbonic acid, but also a dangerous amount of effete organic matter.

Since the animal itself is the vitiating agent, the air of an inhabited building can never be perfectly pure; but the object of ventilation is to prevent the impurities—chiefly organic matter and carbonic acid—from attaining such proportions as experience has shown to be distinctly injurious. This object we obtain by promoting the interchange of gases between the air of the building and the outer pure atmosphere.

Clearly, then, a point of primary importance is to determine what degree of purity shall satisfy us in the air of the building. It has come to be recognised as a fundamental principle, in ventilating human habitations, that the ventilating arrangements must be adequate to prevent the carbonic acid from attaining a greater proportion than 6 parts in 10,000 of the air of the apartment,—the proportion of carbonic acid, be it remembered, serving as an index to the degree of vitiation from the deleterious organic matter. This cardinal principle has been arrived at as the result of wide experience and observation, and it may provisionally (that is, until experience shows it to be wrong) be accepted as equally applicable to the case of the lower animals. There is not a single known fact in connection with physiology to lead us to believe that these animals are any more resistant to the prejudicial influence of the effete matters

they add to the atmosphere than human beings are. Abstract reasoning, indeed, might rather lead us to the very opposite conclusion; for if, as there is some reason to believe, living organisms have some power of adapting themselves to adverse influences after a long period of exposure to them, then, since there is no room to doubt that man has for a longer period than any of the domestic species of animals been under the adverse influence of having to breathe a more or less vitiated atmosphere (for the simple reason that man must have been accustomed to shelter himself in some kind of a tenement long before he took to the rearing of the lower species in confinement), it might be inferred that human beings must have become so modified as to be less affected than other animals by the breathing of a vitiated atmosphere. If, in order to maintain human beings in a state of health, the proportion of carbonic acid should not exceed 6 volumes in 10,000 of the air that they breathe, we must admit that it is desirable to keep the atmosphere breathed by our domesticated animals at least at the same degree of purity.

Another preliminary point to be settled is the rate at which carbonic acid is exhaled in the breath of an animal. The amount of this varies, of course, in different animals, chiefly according to size. In the case of the human species it has been estimated that an adult exhales about two-thirds of a cubic foot per hour. The amount exhaled by the horse is probably ten times that, or about 6 cubic feet per hour. Some authorities give a lower estimate than this, basing their calculations on the relative capacity of the human and equine lung. Even this basis would, we think, support the estimate just given; but a safer method of calculation is based upon the relative amounts of carbon in the average diet of a man and a horse, for the carbonic acid exhaled by the lungs represents, broadly speaking, the oxidised carbon of the food, and the amount of carbon in the average daily diet of a horse is as nearly as possible ten times the amount in an average human dietary.

If the foregoing estimate is correct, it follows that a horse will vitiate 30,000 cubic feet of a pure atmosphere per hour. For this atmosphere has to start with 4 cubic feet of carbonic acid in 10,000,—that is, 12 cubic feet in the total 30,000, and the horse in one hour adds other 6 cubic feet, making 18 cubic feet of carbonic acid in the 30,000 of air—in other words, 6 parts in 10,000. The problem in ventilation is to keep the proportion of carbonic acid from exceeding this ratio.

In attempting to attain this object, attention has to be given to two important limitations, viz. (1), there must be a minimum cubic space for each horse, and (2) the pure air which it is our object to supply must be delivered in such a way as to avoid

the formation of actual draughts or air currents impinging on the animals.

It is obvious that there must be a downward limit to the cubic capacity allowed for each animal. We could, for example, supply 30,000 cubic feet of air per hour to an apartment not greatly larger than the animal contained in it. But the smaller the apartment, the shorter will be the distance between the apertures for the inlet and those for the outlet of the air currents, and hence the chances of a large proportion of the pure air passing rapidly through the building without circulating in it will be greater. Moreover, these air currents will be much more likely to constitute actual draughts, and to impinge on the animal, when the cubic space is small. In order to avoid these dangers, it is desirable to have a cubic capacity of at least 1800 cubic feet per horse, and in the case of large horses probably 2000 cubic feet should be accepted as the standard.

It is desirable that for each horse there should be a floor space of at least 80 square feet. If much less than this is allowed, the distance from wall to wall is so short that it becomes almost impossible to insure sufficient ventilation without exposing the animals to actual draughts.

In devising means to supply each animal with the necessary amount of pure air, we take advantage of the natural tendency of the heated and vitiated air to rise; for if we give it exit at the highest part of the building, and at the same time provide means by which the colder and purer atmosphere may enter at a lower level to take its place, then the animal itself, by its heating effect on the air of the building, will tend to keep the circulation going. Another natural agency that we may take advantage of is the perflating and aspirating power of the wind. For example, if the wind is blowing directly across a building, it tends to force itself in by apertures on the windward side, while on the leeward side it exerts a suction effect, tending to draw air out by any suitable apertures that may exist there.

It ought to be observed that it is of far greater importance to provide a sufficiency of apertures for the outlet of the foul air than for the entrance of the pure air, because if the foul air is not allowed to escape, pure air will not enter even if it has the means; while if the foul air is allowed to escape, the consequent tendency to the formation of a vacuum, or an area of diminished pressure, will lead the outer air to enter even by adventitious apertures, such as chinks of doors and windows.

It is obvious that the smaller the sectional area of the entire inlet apertures, the more rapid must the current of air be in order to deliver the requisite volume of pure air. It is therefore desirable to give these openings such a size as will enable us to introduce the air with only a moderate velocity: for it will then the

more readily diffuse equally throughout the building, and it will be the less likely to impinge as an actual current on the animals. A velocity of 3 feet per second is just perceptible as a draught to the human subject, and probably such a velocity might safely be allowed in the ventilation of stables, &c., provided means be taken to direct the current in an upward direction. An opening of 20 inches square—that is, one having a sectional area of 400 square inches—would deliver 30,000 cubic feet of air per hour, with a velocity of 3 feet per second. A safe rule in ventilating a stable would therefore be to provide 3 square feet of outlet aperture per horse. If this be done, then a slightly smaller sectional area may serve for inlet apertures; for, as already said, adventitious openings in doors and windows often serve to admit air, and thus add to the sectional area afforded by specially constructed openings.

We may now proceed to apply the principles already set forth to the ventilation of different forms of stables. And in the first place, we may take the form of stable that is on farm premises probably the commonest, and certainly the best, viz., that in which the stalls are arranged as a single row along the length of the stable, and in which the roof is an open one. By this last expression we mean a stable where there is no ceiling, and no loft or other apartment, between the horses and the roof. There are two great objections to the use of a hay-loft over a stable. The first is, that it is generally made at the expense of the cubic capacity of the stable; and the second is, that where, as is generally the case, there is a direct communication between the stable and the loft, the heated foul air naturally rises into the loft and contaminates the hay.

A single row of stalls is preferable to a double one, even although the cubic capacity and floor space for each animal is the same in each, for the windward side of the building will always be better ventilated than the other.

The inlet apertures should in every case be equally distributed on both side walls, and they ought to discharge their stream of pure air at a level above the horses' heads, and with an upward inclination. When this is done the stream of cold air is somewhat warmed by mixing with the air of the stable, and descends insensibly towards the floor. In such a stable as we are now considering, the inlet apertures are best placed immediately under the eaves, but they may be placed at a lower level, provided they are so constructed as to deliver the current with an upward direction. The inlet apertures may take a variety of forms, all of them quite efficient. In brick buildings a continuous row of perforated bricks may be carried along the top of the wall. Instead of these in stone walls, square or round holes may be made at regular intervals, the

outer mouth of each opening being protected by a grating. It is better to have these apertures numerous and small, rather than to have a few large ones at considerable intervals, as the distribution of pure air is thereby made more uniform, and the currents are more broken up.

A very excellent means of providing for the ingress of air is found in the so-called Tobin shaft. This is a tubular shaft or passage to which the pure air finds entrance by a hole near the bottom of the wall. The shaft may either be carried up inside the material of the wall, like a small chimney, until it reaches a point above the level of the horses' heads, where it opens into the stable; or it may have the form of a wooden tube carried up the wall on its inner side. In either case a strong current of air will be found to flow through the shaft at all times, and it has the advantage of discharging the air with a marked upward impetus.

When the walls are rather low, the openings may be provided with what is called a Sheringham valve. This is a wooden contrivance hinged to the inner mouth of each opening. When shut it completely blocks up the aperture, and when open it protrudes inwards, and offers towards the aperture a sloping passage which directs the current upwards.

In employing any of these different varieties of inlet apertures, care should be taken that the total sectional area is not much less than 3 square feet per horse.

In a stable with an open roof the outlet for the foul air should be provided at the ridge, and an excellent form for it is a continuous louvred opening on each side of the ridge. Where there is about 6 feet of the length of the stable for each horse, such louvred openings, with a vertical depth of 6 inches, would give 6 square feet of outlet to each animal. This is double what we have laid down as necessary, but it is to be remembered that, as a rule, only one of the louvred openings will serve as outlet at one time; for when there is any current across the ridge, the foul air will issue only by the opening on the leeward side of the ridge, the force of the wind opposing its exit by the windward opening. To prevent the entrance of snow or rain, it is well to make the upper edge of each opening well overlap the lower edge; and to break the force of the wind and prevent down draughts, it is a good plan to guard the opening with wire-netting or perforated zinc. If the latter material be employed, it will, of course, materially diminish the area of outlet, and account should be taken of this in fixing the depth of the opening.

The outlet apertures may take other forms than the foregoing, provided always that care is taken to provide a sufficient sectional area for each horse.

Where a stable is provided with a ceiling instead of an open

roof, it is much more difficult to ventilate thoroughly; and it becomes more difficult in proportion as the walls are low. If the height of the wall amounts to 12 feet, the inlet apertures may be made at a height of 8 or 9 feet from the floor, and the outlet apertures close to the ceiling. In such a case, it would be advantageous to employ Tobin shafts for the inlets, or to provide the ordinary wall openings with Sheringham valves. Another method of providing outlet in stables of this description, is to carry tubular metal or other shafts from the ceiling up to the roof through the hay-loft or other apartment. This, however, is seldom practicable without interfering with the purpose to which the overlying loft or other apartment is put, and it has little, if any, advantage over the method of placing the exit apertures at the top of the wall.

If inlet and outlet apertures as before described be provided, efficient ventilation will be insured at nearly all times. When, however, the atmosphere is very still, and the outside temperature is high, as it is at times during the summer months, the ordinary apertures may be inadequate to maintain a sufficient interchange between the inside and the outside air. In such a case, we bring window ventilation to our aid. Windows ought always to be placed on both side walls, one opposite the centre of each stall in front and behind. The lower edge of the window ought to be at least 8 feet from the ground, to keep the window out of reach of the horse, and to prevent the current from impinging on the animal when the window is used for ventilation. A convenient size of a window is about 3 feet in depth by 2 feet 6 inches wide. Each window should be hinged at its lower edge, and made to open inwards. When open to a moderate extent, it will then direct the current upwards like a Sheringham valve. When the windows of opposite sides are opened, there will be produced, even when there is no appreciable movement of the outside air, a considerable current across the stable. By this means efficient ventilation may be kept up in even the most sultry weather.

It is, unfortunately, true that many existing stables—perhaps even the majority of them—are defective in their ventilating arrangements, and therefore it may be useful to suggest simple methods of improving the ventilation in such cases. If the stable has an open roof, a ridge louvre may be made at a trifling expense, or small louvred turret-ventilators may be made along the ridge at intervals, and inlet apertures ought to be made in both walls. Even a very bad stable, such as one with a low ceiling and small cubic capacity, may be fairly well ventilated by the following method:—A wooden or metal tube is carried round the top of the walls like a cornice. In the whole of its length this tube is divided by a horizontal partition into an

upper and a lower passage, and the entire circumference of the tube is regularly perforated by small holes. At intervals the lower passage is connected with short tubes or pipes passing through the wall to the exterior. By these latter openings pure air passes into the lower division of the cornice-like tube, and falls gradually into the stable by the holes in it. The heated and foul air on ascending to the ceiling enters by the perforations of the upper division of the tube, which at two or more of the corners of the room is connected with a vertical shaft passing to the exterior and carried up to a considerable height above the level of the ceiling, like a stove pipe. This simple plan is applicable to almost any stable, and it is both efficient and inexpensive. Another plan, somewhat similar but not quite so good, is to carry a number of wooden or metal tubes right through from wall to wall close to the ceiling, each end of the tube opening into the outer air. At the middle of its length each tube is divided by a cross partition, and the entire tube is perforated by numerous holes. Pure air falls into the stable from the windward half of the tube, while the foul air leaves by the perforations in the other half, and is extracted at the leeward side.

Finally, a trifling expense will provide a hinged window, and it may be advisable to close this partly with wire-gauze instead of glass.

In what has just been said, the principles of ventilation have been applied to the case of stables, but the same general principles ought to be taken as the guide in ventilating other farm buildings, and it is therefore unnecessary to consider these in detail. The cubic capacity and area of inlet and outlet apertures requisite for these other buildings vary, of course, with the size of the animals. Probably a suitable cubic capacity would be—for a cow or other full-grown bovine, 1200 feet; for a pig, 400 feet; and for a hound, 200 to 300 feet, with proportional inlet and outlet openings.

By way of illustration of the efficiency (or inefficiency) of the ventilating arrangements, we may give here the analyses of samples of air taken from a number of stables and byres. In all cases the sample of air was taken by leaving the jar in all night, and then closing its mouth with an air-tight cap in the morning as soon as the door was opened.*

Stable No. 1. In this stable there were twenty horses, with a cubic capacity of 1900 feet per horse. The ventilating arrangements comprised a hinged window at either end of the stable, and interrupted ridge ventilation amounting to $2\frac{1}{2}$ square feet per horse. The ridge openings, however, were fitted with per-

For the carefully-conducted analysis of each sample the writer is indebted to Dr A. P. Aitken, the Society's chemist.

	Number of Animals.	Cubic Capacity per Animal.	Area of Ventilating Apertures per Animal.	Number of Volumes of Carbonic Acid in 10,000 of Air.	Remarks.
Stable No. 1	20	1900 cubic feet.	1½ square feet.	10·0	Open roof, ridge openings, but no wall openings.
" No. 2	20	1900 "	1½ "	10·4	
" No. 3	20	1900 "	1½ "	12·7	
" No. 4	12 (sick)	8150 "	2½ "	11·0	Similar in construction to Nos. 1, 2, and 3, but occupied day and night, and door kept shut.
" No. 5	21	1900 "	2½ "	11·5	
" No. 6	7 (sick)	8780 "	3 "	10·4	Close ceiling, occupied day and night.
" No. 7	14	2000 "	2½ "	10·0	Open roof, obstructed ridge openings.
" No. 8	20	2390 "	2½ "	8·4	
" No. 9	12	1784 "	4½ "	9·3	Close ceiling.
" No. 10	20	1612 "	3½ "	11·0	
" No. 11	17	2100 "	2½ "	10·7	
Byre No. 1	10	600 "	..	9·7	Ventilators stuffed with straw.
" No. 2	10	1100 "	..	6·8	Open tile roof.

forated zinc, and the true sectional area of the openings was probably not more than $1\frac{1}{2}$ square feet per horse. On the night of examination the windows were closed. The proportion of carbonic in the sample of air was 10 parts in 10,000 of air, indicating a high degree of impurity. That of course was to be expected. This stable was an admirable one in every point of its construction, save provision for ventilation, but that was extremely defective, there being practically no inlet apertures, and very inadequate outlet accommodation. Nos. 2 and 3 were identical in point of construction with No. 1. The higher proportion of carbonic acid in No. 3 was probably due to the jar having been placed in a position where there was least movement of air.

Stable No. 4. This stable had twelve sick horses, with 3150 cubic feet to each horse. The construction of the stable was similar to that of the preceding three, and the ridge openings amounted to $2\frac{1}{2}$ square feet per horse. Notwithstanding the very liberal cubic capacity allowed to each animal, the air was very impure, as indicated by the 11 parts of carbonic acid in 10,000. This, being in use for a hospital stable, was occupied day and night, and the door was kept shut in order to maintain the warmth considered desirable. This case well illustrates the impossibility of securing a pure atmosphere in the most capacious stable without due provision of inlet or outlet apertures.

Stable No. 5. This stable contained on the night of examination twenty-one horses, with 1900 cubic feet for each. In this case there was a close ceiling $12\frac{1}{2}$ feet from the ground. The ventilating arrangements comprised louvred panes in a row of windows on each side, all the openings being at the same level. These had to serve for both inlet and outlet, and the sectional area for each horse was about $2\frac{1}{2}$ square feet. The stable was quite empty during the day. The proportion of carbonic acid was 11.5 per 10,000 of air. The bad result in this case was attributable to all the openings being at the same level, and to the inadequate extent of the openings.

Stable No. 6. This stable contained seven sick horses, and had a cubic capacity of 3780 feet for each animal. The provision for ventilation took the form of louvred openings at the tops of the windows, which were placed on both sides. On one side, however, all of these openings had been obstructed by nailing thick cloth across them. On the same side on which the louvres were open some of the windows were open. The total area of aperture for each horse was 3 square feet. The stable had a close ceiling. The proportion of carbonic acid was 10.4 parts in 10,000 of air. The high degree of impurity was partly attributable to the stable being occupied both night and day by sick animals, and, for the rest, to the fact that the openings were

all on one side, almost all at the same level, and inadequate in extent.

Stable No. 7. In this case there were fourteen horses, with a cubic capacity of 2000 feet for each. The ventilation was by louvred windows on both sides, giving $2\frac{1}{2}$ square feet for each animal. The roof was an open one, and there was a considerable extent of ridge ventilation, but this was completely obstructed by thick cloth. The stable was occupied at night only, and the proportion of carbonic acid was 10 parts in 10,000 of air.

Stable No. 8 was identical in all respects with No. 4, save that owing to empty stalls each horse had a cubic capacity of 2290 feet, and ventilating apertures amounting to $2\frac{1}{2}$ square feet. In this case, accordingly, the proportion of carbonic acid was considerably less, viz., 8.4 parts in 10,000 of air.

Stable No. 9 contained twelve horses, with 1734 cubic feet for each. The ventilation was by open windows and louvred openings in both side walls, giving $4\frac{1}{6}$ square feet of opening for each animal. There was a close ceiling, and the carbonic acid was in the proportion of 9 parts in 10,000 of air. The relative purity of this atmosphere, as compared with some of the preceding cases, was attributable to the larger sectional area of opening allowed for each horse, and the result is all the more interesting when it is observed that the cubic capacity was much less than in some of the cases where the impurity was much greater.

Stable No. 10 was identical with No. 6, save that the cubic capacity per horse was 1612 feet, and the ventilating openings $3\frac{1}{2}$ square feet. In accordance with these differences, the carbonic acid was in the proportion of 11 parts in 10,000 of air.

Stable No. 11 had the same plan of construction as the preceding one, but nearly 500 cubic feet more was allowed to each horse. This, however, was almost counterbalanced by the ventilating apertures being reduced to $2\frac{1}{2}$ square feet per horse, and the proportion of carbonic acid, accordingly, was approximately the same in the two cases.

Byre No. 1 contained ten cows, the cubic space for each being 600 feet. There was a close ceiling, and the only ventilating openings were holes in the walls stuffed tightly with straw. The proportion of carbonic acid was 9.7 per 10,000 of air.

Byre No. 2. This byre also contained ten cows, but the cubic capacity allowed to each was 1100 feet. There were no special openings for ventilation, but the roof was of tiles with very loose joints. The proportion of carbonic acid was 6.8 in 10,000 of air, indicating an approximately pure atmosphere.

If the foregoing cases may be taken as average samples of the efficiency of ventilating arrangements in such buildings throughout the country, and if the general principles laid down in the

preceding part of this paper are correct, then it follows that there is a lamentable room for improvement in the ventilation of stables and byres in general. But, in truth, the stables from which these samples of air were taken are, in respect of cubic capacity and of ventilating apertures, far above the average. The cubic capacity per horse in most of these cases was excellent, but in some of them that was due to the accident of there being several empty stalls. A stable with a cubic capacity of 2000 feet or even 1600 feet per horse is very decidedly the exception rather than the rule; and numerous stables, both in town and country, have a cubic capacity less than one-half of the smaller of these figures. To find a byre, again, with 1200 cubic feet to each inmate would require, perhaps, pretty wide travel, though there would be no difficulty in finding one with a cubic capacity of less than the third of that. And so, also, with regard to provision for air currents. Very few buildings have anything like what we have laid down as the standard for inlet and outlet openings. There would be no difficulty in finding both stables and cattle-houses with no such openings at all; and it would be easy to find cases where the few inadequate openings have been carefully stuffed with straw or otherwise obstructed.

We mention these facts to anticipate an argument against such free ventilation as is here advocated. For many people will say—the very fact that hitherto stables and byres have (as compared with the standard here set up) been inefficiently ventilated without any untoward consequences, proves that the dangers of an impure atmosphere have been greatly exaggerated. But the answer to that is that there *have been* untoward consequences. Both the sick-rate and death-rate among our domesticated animals are far higher than they ought to be, and every veterinary surgeon of experience will testify that he has proportionally more work to do among animals housed in small, dark, and ill-ventilated buildings than among those whose sanitary surroundings are better.

The sedulous care with which those in charge of the domesticated animals shut up ventilators and exclude pure air might almost lead one to think that there must be a widespread belief that a pure atmosphere is positively hurtful. What appears, however, to be the true explanation of this custom is, that the keeping of the animals warm is regarded as a point of far greater importance than the providing of a pure atmosphere. And it cannot be denied that, unless recourse be had to artificial heating, free ventilation in this country in the winter season entails a low temperature of the building. For, of course, a pure internal atmosphere is only to be obtained by a rapid interchange between the inside and the outside air, and this rapid interchange tends to assimilate the inside and outside tempera-

tures. If a low temperature (from, let us say, 40° F. down to the freezing point) were inimical to health, then we should be in the position of having to choose between two evils, viz., that of having efficient ventilation and a hurtful temperature, or that of having a proper temperature but an injuriously impure atmosphere. Fortunately, however, there is no good ground for supposing that a temperature as low as we have mentioned is at all incompatible with the health of either horses or cattle. On the contrary, if they are provided with a sufficiency of food and with shelter, especially from excessive wet, we in general find that these animals thrive admirably in the open air, even at ordinary winter temperatures. It cannot, therefore, be admitted that these lower temperatures are productive of disease, or that there is any necessity, from a sanitary point of view, to keep the temperature above what it would be in the winter season with ventilation as free as we have advocated.

There is, however, one drawback to free ventilation in cold weather, viz., that the colder the surrounding atmosphere is, the greater is the loss of heat from the animal's body, and the greater therefore is the proportion of the animal's food consumed in making good that loss. To restrict the ventilation, and thus to keep the animals warm, would effect some slight saving in the food consumed; but that would be the utmost advantage, and to set against it there would be all the evils entailed by breathing a vitiated atmosphere.

But while this is true of stables, it cannot be denied that free ventilation of cow byres in mid-winter is likely to produce a lower temperature than that which is most favourable for an abundant secretion of milk. A slight addition to the amount of food consumed by horses exposed to a low temperature through free ventilation would counterbalance any extra loss of heat, and leave them all the advantages that accrue from breathing a pure atmosphere; but it is more than probable that a mere addition to the dietary of a cow kept in a very cold byre would not enable one to obtain as much milk from that cow as would be secreted at a higher temperature, with less food consumed. In short, to obtain the maximum amount of milk from a cow, a low temperature must be avoided. The abundance of the lacteal secretion depends largely on the amount of blood that circulates through the udder in a given time; and that circulation appears to be in great measure checked by a low temperature, just as is the case with the circulation through the vessels of the skin. From this it would appear that, unless recourse be had to artificial heating, we must really, in the case of cow-houses, choose between two evils—that is to say, we must either ventilate up to the standard required to give a pure, healthful atmosphere, although this

should entail a diminished secretion of milk, or we must restrict the ventilation so as to maintain the temperature most conducive to the flow of milk, and make up our minds for the risks attendant upon the breathing of a vitiated atmosphere.

Fortunately, however, it is during only a short period of the year that this objection to free ventilation of byres has any force, and it is not an objection that requires to be urged, for any circumstance that checks the yield of milk attracts immediate attention, while the effects of imperfect ventilation, on the other hand, are not made evident in a day, and, indeed, to the superficial observer are generally not made evident at all. If full weight be given to the importance of efficient ventilation, common sense may be left to strike the balance correctly in such a case as this.

It must be confessed, however, that as yet the importance of ventilation hardly appears to have been grasped at all by stock-owners and stock-attendants. It is lamentable enough to find a stable with very inadequate provision for ventilation, but it is doubly lamentable to find the already insufficient inlet or outlet apertures deliberately obstructed. Something more appears to be necessary than to fix the standard amount of inlet and outlet apertures to be provided in the construction of farm buildings, and that something is the bringing home to the owners of horses and cattle the fact that efficient ventilation means the preservation of health and the saving of money. In short, in this matter diffusion of knowledge is as important as diffusion of air.

ABORTION IN COWS.

THE loss to which stock-owners are liable from abortion in cows and other stock has at all times been regarded as one of the accidents incident to the pursuit of their industry. Even on the best regulated farms, and under the most favourable conditions, it is likely that a certain number of breeding stock will abort or produce their young prematurely, and it is well known that there are many accidents to which pregnant animals are liable that will cause this. Direct injury, enfeebled health, mismanagement, and, it may be, hereditary taint, are sufficient to account for the occurrence of what may be regarded as the normal amount of abortion in breeding stock.

So long as the proportion of abortions does not exceed 2 or 3 per cent., the circumstance does not occasion any anxiety to breeders, and the malady, if it may be so called, is not productive of serious loss. But it sometimes occurs, and during recent

years the occurrence has been very frequent, that an enormous number of abortions take place in certain seasons and in certain districts, especially among cows, so that it is not uncommon to hear of breeders having on some occasions lost 50, and in some cases even as much as 80 per cent. of their calves, through what may justly be regarded as a plague of abortion. When abortion assumes such enormous dimensions, it must be regarded as an epizootic disease, whose cause must be looked for in some altogether unnatural and exceptional circumstances outside of the animals themselves. Various theories have been broached to account for this exceptional and serious malady, and various means have been adopted to combat it; but it must be confessed that neither the theories, nor the preventive measures to which they have given rise, have succeeded in explaining the nature of the disease, or the means of averting it.

The heavy loss which these outbreaks occasioned, and the pressing need that existed for some investigation into their cause, was brought under the notice of the Directors of the Highland and Agricultural Society, who resolved to institute an investigation into the matter. As there seemed to be good grounds for supposing that this might be one of those diseases of an infective kind, due to the action of micro-organisms, it was resolved to put the investigation into the hands of Dr Woodhead, who had had much experience in that kind of investigation, and the Society's Chemist was asked to co-operate with him, and obtain whatever assistance was needed from veterinarians or other experts. Acting upon this recommendation, Professor M'Fadyean was asked to co-operate in the investigation, and he at once agreed to do so. A working committee of three members was thus formed, and the following preliminary report has been drawn up by them, in order to make the members of the Society acquainted with the steps that have already been taken, and to enlist as much as possible the co-operation of all who are able to render any practical assistance in the pursuit of what is a difficult, and, it may be, a prolonged investigation.

*Report by Dr G. Sims Woodhead, Professor M'Fadyean,
and Dr A. P. Aitken.*

In approaching this investigation, we found that the ground of an inquiry was partly mapped out by the circumstance, that several theories of the etiology or cause of abortion were already afloat. We determined to collect information connected with the occurrence of the disease, to examine carefully how far the information so collected was reconcilable with or opposed to any of these theories, and to institute such experiments as might be necessary, to decide as to the correctness of any theory where mere

observation of the circumstances connected with the disease, as it naturally occurs, was insufficient.

With this object in view, we advertised in the chief Scottish newspapers, inviting the co-operation of those who had experience of the disease; and to those who replied, and to all others who were suggested to us as capable of giving information, we issued schedules containing the following queries, which had previously received the approval of the Veterinary Committee of the Society :—

- " 1. During how many seasons have you had cases of abortion, and what proportion of your calving cows have aborted each year ?
- " 2. In what breeds has it occurred ?
- " 3. At what season of the year do cases occur ?
- " 4. At what stage of pregnancy does it occur ?
- " 5. Are the cows under one roof, or how are they distributed ?
- " 6. Are the cows entirely stall-fed, or are they allowed to grazing during summer ?
- " 7. Are the cows tied up in stalls, or are they kept in loose boxes ?
- " 8. Have you observed that successive cases occur among cows standing near each other, or under the same roof ?
- " 9. When a cow is near calving, or has just calved, is she removed to a special building ?
- " 10. Is there any age at which cows are chiefly liable to abort ?
- " 11. Have you noticed any tendency of special cows to abort in successive seasons ?
- " 12. Prior to your first case, had abortion been prevalent in your immediate neighbourhood ?
- " 13. Is abortion generally prevalent in your district ?
- " 14. Have cattle at other infected farms access to your water supply ?
- " 15. Have any circumstances occurred to cause you to suspect that abortion is an infectious disease ?
- " 16. Were the cows which aborted in any one season all served with the same bull ?

- " 17. Has the nature of the feeding any effect in causing the disease?
- " 18. Previous to abortion, have the appetite, digestion, and general health of the cows been satisfactory or otherwise?
- " 19. Does the health of the cow suffer after abortion?
- " 20. When abortion occurs, does the cow clean after the usual interval, or is the period delayed?
- " 21. Is the calf usually fresh, or more or less putrid?
- " 22. How are the dead calves and cleansings disposed of? and are any special precautions taken in their disposal?
- " 23. Has any treatment been adopted? and if so, with what results?
- " 24. Have disinfectants been used in any way? If so, how, and with what results?
- " 25. Have you had cases of abortion among your other breeding stock? If so, say which?"

We also advertised in the newspapers that we should be glad to be informed of any outbreaks of abortion, and to all who had returned schedules there were sent a few instructions describing what immediate steps should be taken by them in the event of cases of abortion occurring among their stock by which they might co-operate in promoting the investigation. We are glad to be able to report that we have received much valuable assistance. Samples taken in accordance with the instructions have been forwarded to us, and we have been enabled to make a personal inspection of places where the disease has occurred.

To those gentlemen who assisted us in this inquiry, and to those who sent answers to the above queries, we take this opportunity of returning our best thanks.

From the answers furnished to the above circular, and from the facts gleaned during visits made to investigate particular outbreaks on the spot, a body of valuable information has been acquired, and the bearing of this information on the current theories of the causes of abortion we purpose discussing shortly in this preliminary report.

The information received under the first query is so important, as showing the widespread and aggravated nature of the disease, that no apology is needed for referring to it somewhat fully. For the sake of convenience, the facts are thrown into tabular form, and each case has affixed to it a number, which will facilitate reference in the further part of the report.

PREVALENCE OF ABORTION IN COWS.

No. in Report.	Stock in Calif.	No. of Seasons of Abortion.	Highest percentage.	Other Seasons.	Lowest percentage.	Remarks.
30	30	2	80 (1880)	...	23 (1886)	
25	20	2	75	...	75	
4	...	2	75 (1885)	...	50 (1886)	
22	...	3	75 (1861)	50 (1882)	25 (1883)	
15	...	2	75 (1869)	...	75 (1870)	Foot-and-mouth disease.
24	...	3	66	33	25	
17	...	(1884-5)	60	...	17	
5	...	30	50	...	50	
6	60	6	50	...	50	
26	...	3	50	...	...
28	50	1	42 (1886)	...	...
20	26	3	45 (1877)	40 (1886)	36 (1878)	2 in 1885, followed by outbreak in 1886.
13	...	4	40	10	...	At intervals of 4 or 5 years.
7	...	30	33	...	1	This year none.
16	...	3	33	...	33	
18	100	2	33	...	25	Usually about 5 p. c.
9	...	25	30	...	3	Not a season without.
14	100	2	30 (1878)	30 (1884)	...	Always 2 to 4 p. c.
21	50	13	25 (1881)	...	4	
11	...	5	12	...	...	Average 10 to 12 p. c.
12	50	7	...	...	...	Average 8 p. c.
27	...	3	...	...	...	Average 5 p. c.
10	...	4	...	...	...	Average 2 or 3 p. c.
8	...	...	5 (1884)	...	...	Average 3 or 4 p. c.
1	80	...	...	...	...	More or less.
2	...	20	...	...	...	" declining.
3	...	4	...	...	...	2 p. c.
23	...	10	...	...	...	Had two outbreaks during this period.
19	...	49	...	...	...

A glance at the above table will give some idea of the alarming extent to which abortion prevails in many herds at the present time. Indeed, so prevalent has it been in some stocks, that when the proportion falls to something like 5 per cent., the owners make no complaint, regarding that as the proportion to be expected in any herd. That a case of abortion is likely to occur now and again in any herd is true, but fortunately there are many stock-owners of large experience who would dissent from the opinion that 5 per cent. of their cows may be expected to abort in every year.

It will be found, on referring to our statistics, that in one case 80 per cent. of the cows in calf aborted—in three cases 75 per cent., in one 66 per cent., in four cases 50 per cent., in one 42 per cent., in two 40 per cent., in four 33 per cent., in two 30 per cent., and in five 25 per cent.

The bad seasons do not occur singly, but in sets of two, three, or even more, and the outbreak in the first year is usually the most severe (see Nos. 30, 4, 22, 24, 28). In all these cases a regular decline in the number of cases is noticed. This may of course be due to various causes. It may be that if it is an infective condition, there is a gradual diminution in the power of the infective material (a state of matters often noted by epidemiologists in connection with cholera, typhoid, scarlatina, &c., in the human subject). But it should also be borne in mind that the converse holds good, and that a sporadic case of infection may become the centre from which an epizootic form may spread; and that in many of those farms where a few cases are noted yearly, with an outbreak at intervals, the epizootic form may be a sequel to the sporadic form. This has been frequently suggested, but as yet the evidence in support of the theory is far too fragmentary. Another, and perhaps a more probable reason for the gradual diminution in the intensity of the outbreak is, that, when an outbreak does occur, various precautions are taken to prevent the spread of the disease.

The inquiry has proved that the disease is prevalent throughout the length and breadth of Scotland, and there appears to be a general opinion that it is yearly becoming more common. However that may be, it is certain that a great annual loss to cattle-breeders must now be laid to the score of this disease. The inquiry has further shown that no breed can be said to have any special susceptibility to or exemption from abortion. We have learnt of serious outbreaks among Shorthorns, Galloways, Ayrshires, Polled Angus, and Kyloes.

The facts before us appear to negative any theory that would ascribe abortion to particular geological or climatic conditions. Besides, it may be mentioned that the disease is at the present time engaging the serious attention of stock-owners throughout the continent of Europe and in America. Neither does epizootic abortion occur chiefly in cows of a certain age. The general opinion of the correspondents is that cows are liable to abort at all ages, although a few consider that there is a special liability to it among young animals.

As to the term of pregnancy at which cows are most liable to abort, it would seem that from the sixth to the eighth month is the most common time, but cases occur as early as the third month. The instances which came under the personal investi-

gation of the committee occurred at various stages of pregnancy, ranging from the third to the eighth month.

There is a general belief that when a cow has once aborted it is more liable than others to abort in future years, and it is therefore a common practice to fatten it off for the butcher as soon as possible. This belief is probably well founded, but much will depend on the exciting cause of the abortion. If it were due to individual weakness, the probability is that it would occur again, but we have not as yet sufficient evidence before us to enable us to say whether or not a cow that has slipped calf during an outbreak of abortion is more liable than others to abort thereafter. Certain it is that in very many cases cows that have aborted once are found to carry their calves to full term in after years.

If we confine our attention strictly to cases where serious outbreaks of abortion have occurred, it seems evident that there is no race, nor age, nor condition of cow that is less liable to the malady than another.

We may now proceed to discuss the various opinions which are prevalent regarding the causes of abortion, as indicated by the results which have been furnished to us by those who have replied to our circular, or by those with whom we have been in personal communication.

Leaving out of account such causes as mechanical injury and fright (which are undoubtedly capable of exciting abortion, but which are of little importance, since they can always be excluded in any inquiry into the causation of what may be called an outbreak of the disease), the following are the chief theories that have been advanced to account for its prevalence:—

1. Constitutional taint.
2. Errors of diet.
3. Ergoted grasses.
4. Sympathy.
5. Contagion (a specific germ).

Constitutional Taint.—It is conceivable that the unnatural conditions under which man rears the domesticated animals, and cattle in particular, might tend to exert an injurious effect on the reproductive system, and entail a debility of that system which might manifest itself in a liability to abortion or premature labour. But while this must perhaps be admitted as a possible cause of the increasing prevalence of abortion, it ought not to be accepted as the actual cause unless every other possible cause is excluded. For if we admit that long ages of domestication might produce such a functional impression on the organs of reproduction without any corresponding structural change, we could never expect to prove domestication to be the

cause of abortion except by a process of exclusion. But there are several considerations sufficient to discredit this theory. For example, if the theory were correct, we should expect to find very different degrees of susceptibility to abortion in different breeds and strains of cattle, but no such differences are observable. Again, if the prevalence of abortion were ascribable to any such general or widely-acting influence as domestication, we should not expect to find it rampant in one or two particular herds in a district, while other herds of perhaps the very same breed and strain in the same district escaped. In short, in nearly every outbreak the evidence excludes this theory.

Under this head it may be noticed that some outbreaks of abortion have been ascribed to the general prevalence of tuberculosis in the herd. But unless the tubercular disease were located in the generative organs (in which case it is generally a barrier to conception), tuberculosis would not render the animal liable to abort, and it is in only a small moiety of consumptive subjects that the generative organs are attacked. And here again it may be said that tuberculosis ought not to be accepted as the cause of abortion unless *post-mortem* examination has shown the disease to be prevalent in the herd, and unless every other possible cause of abortion has been excluded. In every outbreak investigated by us it has been easy to exclude this as a possible cause.

Errors of Diet.—This has frequently been assigned as a cause of abortion, and generally, it appears to us, on insufficient evidence. It may perhaps be admitted that an improper diet, such as an excess of turnips in proportion to other food materials, frosted or rotten turnips, excessive quantities of boiled or washy food, &c., anything, in short, which causes derangement of the digestive functions, might excite abortion; but it is hardly conceivable that the reproductive organs would be affected by these things before the alimentary organs gave any indication of disorder, and nothing is more certain than that, in most outbreaks, the digestive functions are performed up to the very day of abortion without the slightest trace of disturbance. Besides, there does not appear to be any common distinguishing feature in the dietary of the cows in a series of outbreaks; on the contrary, the dietary of these is just as various as that of unaffected herds. Moreover, the system of feeding in force on affected farms is frequently identical with that at unaffected farms in the same neighbourhood, and stock-owners are seldom able to connect the sudden appearance of an outbreak with any deviation from the system of feeding which prevailed while they were free from the disease. Another fact, which goes against this theory, is that, when once an outbreak

does occur, cow after cow aborts, though the feeding, in the meantime, be changed. In some of the outbreaks of which we have learned particulars, a proportion of the cases occurred while the cows were at grass in summer and autumn, and others throughout the winter while the cows were housed and stall-fed.

We have not been able to discover any reliable evidence that improper feeding is the common cause of abortion. We regret this, for had such been the cause, the remedy would have been easy. Where attention has been confined to a single outbreak, an opinion is often held that misfeeding was the cause, but it appears to be nothing more than an opinion. To lay any outbreak to the charge of a particular system of feeding appears to us to be untenable, unless that system is shown to be markedly different from what is in force at unaffected farms, and unless by the simple act of changing the diet, the outbreak can be arrested at will. We are not prepared to say that injudicious feeding may not cause abortion, but however that may be, there can be no doubt that aggravated outbreaks of abortion have occurred on farms where the feeding was of the most approved kind.

Ergoted Grasses.—The belief that ergoted grass or hay is a frequent cause of abortion appears to be pretty widely spread. Ergot is known to have the physiological property of exciting contraction of the womb during labour, and it has been largely used both in human and veterinary practice, with the object of hastening the expulsion of the young animal when the contractions of the womb are weak. In particular seasons and localities large quantities of ergot are found on the various grasses—particularly on rye-grass—and this, taken in conjunction with its known physiological action, would naturally incline one to expect that it might be found to be a cause of abortion. It must be observed, however, that the administration of ergot cannot be relied upon to excite labour prematurely, even when given in large doses, in proof of which no other evidence need be adduced than that both human and veterinary obstetricians have generally to resort to mechanical means when from any circumstances it becomes necessary to bring about the premature expulsion of the foetus. It is, therefore, a hasty assumption to regard ergot as the cause of abortion simply because examination has shown that the pasture or hay consumed by the animals was ergoted to some extent. What ought to be done before crediting the ergoted grass or hay with the abortion, is to take cows from an unaffected farm and show that abortion can be excited in them at will by the administration of ergot in such quantities as computation shows must have been consumed by the animal whose abortion was ascribed to ergoted hay or

pastures. In no case, so far as we are aware, has this been done; on the other hand, ergot has been given for long periods and in large quantities to pregnant animals without causing them to abort. Further evidence on this head, however, appears to be desirable, and we purpose instituting experiments bearing on the point.

Meanwhile it would perhaps be rash to say that outbreaks of abortion have not been caused by ergot, but there certainly are many instances that could not possibly be accounted for in that way. For example, abortion at the present time is very prevalent in herds where the cows are receiving no other fodder during the winter months than oat straw, which contains no ergot, and in none of the instances that have as yet been investigated by us have we been able to detect any ergot in the hay on the farms.

Sympathy.—A theory that the mere fact of one cow aborting, from any cause whatever, may act as an exciting cause of abortion in other cows of the same herd, has often been brought forward to explain instances of what may be called an outbreak of abortion, and the word "sympathy" has been employed to denote this supposed influence which a cow in the act of aborting, or after that act, exerts on her neighbours. We have not found any evidence whatever of the correctness of this theory. The fact that when once a case of abortion does occur, other cows of the same herd are apt to follow suit, has been cited as evidence of the truth of the "sympathy" theory, but that is obviously attempting to prove the theory by adducing in evidence the admitted fact that the theory was framed to explain.

If mere sympathy with labour were the cause of the malady, the circumstance of a cow calving at full time ought to be sufficient to cause abortion in pregnant cows that are cognizant of it, but there is abundant evidence in the returns sent in to us that no such consequence occurs. Out of the whole number of those who have returned answers to our questions, only twelve remove full-term cows to separate boxes or byres in which they may calve, and it is somewhat curious that several of the severest outbreaks have occurred at places where that practice is pursued. The occurrence of calving in a byre does cause some excitement amongst the other occupants of the building, but the evidence is almost unanimous that the occurrence does not culminate in a general abortion.

It must, therefore, be believed by those who hold the sympathy theory, that cows are able to discriminate between regular and premature labour, and that it is only the latter which excites their sympathy and prompts them to perform an act of which may be called social abortion. It has been asserted by some of those who hold the sympathy theory that

when a cow aborts there is propagated a peculiar odour which cows can discern although human beings cannot detect it, and that it is this odour that produces the malady. This is not only pure theory, but it is shifting the cause of abortion from sympathy to a smell.

There are some correspondents who go so far as to say that powerful, and especially what men consider bad, odours may induce abortion. This is a matter capable of experimental proof, but as yet we have not received a vestige of proof in support of that opinion. There is one thing certain, that neither the social abortion due to sympathy nor the sentimental abortion ascribed to smell can explain the cause of those outbreaks that have as yet come under our notice.

It is found that in those herds where the disease has been productive of most loss, there is about an equal proportion of cases in which the cattle are housed under one roof, and of those in which they are in different byres. In one case, where the outbreaks were very severe (No. 15), the cattle are at three different farms; and in another instance (No. 17), they are distributed over two farms, where they are housed in different byres. One owner (No. 6) states that his cattle are distributed over three different farms, not allowed to mix if abortion occurs, but that this makes no difference. The sympathy theory is discredited by the fact that in some of the most severe outbreaks the animals affected were not able to see one another, and in many cases there was no possibility of even smell passing directly from animal to animal. No inference can be deduced from the fact that about equal numbers are affected whether in one byre or several, or even on different farms, unless we could find out the exact condition as to means of isolation adopted where there has been such outbreak. This leads us to consider the next theory, viz.—

Contagion.—According to this theory, the act of abortion in many cases is the result of a disease which is transmissible from an affected cow to a healthy one, after the manner of such admittedly contagious diseases as pleuro-pneumonia, glanders, &c. That is equivalent to saying that the essence of the act of infection or transmission of the disease is the transference of a particular germ from the diseased animal to the healthy. In other words, it explains the act of abortion as the result of some specific micro-organism in the body of the cow—the most probable seat of multiplication of the organism being the womb or other part of the genital passages. This theory does not preclude the possibility of the occurrence of abortion from other causes, but it is held to be the explanation of the majority of outbreaks of the disease. It is probably the

most modern of the various theories, but it is the one that is at present gaining most ground.

It appears to us that this theory harmonises better than any of the others with the bulk of the information that we have been able to gather concerning the disease. It would certainly explain many points that are otherwise mysterious, but at the same time there are certain facts which, without being absolutely irreconcilable with the theory, are yet in apparent antagonism to it. For example, it would afford an explanation of the occurrence of successive cases in a herd in a much more natural manner than does the "sympathy" theory—that is to say, it would be more natural in the sense that reasoning by analogy would strongly support it. A point that appears in conflict with the theory is that it is not generally observed that successive cases in a herd occur among cows standing in immediate proximity. On the contrary, from the information gathered by us, it appears that when one case occurs, the next case is just as likely to be in a cow remote from the first. Again, instances have occurred where there was no discoverable source of infection to account for the first case in the stock, where, for example, there had been no cows bought in for a period of two years prior to the occurrence of the first case. It must be admitted, however, that instances of this kind occur in connection even with such diseases as pleuro-pneumonia, foot-and-mouth disease, &c., but still our inability to prove infection in every such case need not shake our belief that there is in every case an actual infection.

But the mere plausibility of this or any other theory must not be taken for proof of it. It is of the utmost importance that this theory should either be proved or disproved, for if it were proved to be correct the lines upon which action ought to be taken against the disease would be clearly indicated; and, on the other hand, if the theory is erroneous the sooner it is disproved the better, in order that search for the cause of the disease may be the more vigorously prosecuted in other directions.

Fortunately, this is a theory that lends itself easily to experimental investigation. To test it, it suffices to procure cows that have just aborted, to remove them from their accustomed surroundings, and place them in company with pregnant cows from a healthy herd, and see whether abortion is produced by that means. To hasten the experiment, we may take some of the discharge from the genital passage of an aborted cow, or any other material that is considered likely to contain the specific germ, and introduce it into the system of a pregnant animal by whatever channel is mostly likely to favour its development. If *repeated* experiments of this kind invariably give negative

results, proof will be afforded that the germ theory of abortion is erroneous; if, on the other hand, we can by such means produce abortion at will, or in the majority of our experimental trials, then the truth of the theory will be established. That, however, would not end the investigation, for search would still have to be prosecuted with the view of discovering the specific organism itself, in order that we might experiment with it, and learn all that was possible of its life history.

Experiments of the nature just sketched are now being carried on by us.

In the meantime we would urge on all who are having experience of an outbreak of abortion that they would render very material assistance by at once informing us of the circumstance. There is a disinclination on the part of some to give publicity to the fact that abortion is prevalent on their farms, but that need be no obstacle to their freely communicating with the committee, who will regard all such communications as confidential.

Letters or telegrams should be addressed to Prof. M'Fadyean, 8 Clyde Street, Edinburgh.

INQUIRY INTO THE PRICES RECEIVED BY PRODUCERS AND THE PRICES PAID BY CONSUMERS FOR FARM PRODUCE THROUGHOUT SCOTLAND, FROM 26TH, MAY 1885 TO 26TH MAY 1886.

In December 1885 the following resolution was adopted at the Board of Directors of the Highland and Agricultural Society:—
“That the Directors, considering that agriculture suffers no small injury from the great additional price which the consumer now pays for farm produce over that received by the producer of the same, resolve to appoint a committee to inquire into and consider the matter, and to report to the Board what, if any, action can be taken by the Society to alleviate or remove the evil.”

In January 1886 a large and influential Committee of its members, presided over by the Marquis of Lothian, was appointed to consider and inquire into this subject. This committee, in order to obtain some reliable information as to the facts of the case, as well as to elicit generally the views of those interested in the question, determined, at their meeting in April 1886, to conduct the inquiry submitted to them by means of queries, addressed on the one hand to some of the leading Occupiers of land, and on the other hand to well known and

reliable Consumers in the different districts of Scotland, asking from the former for returns of the prices they had received, and from the latter for returns of the prices they had paid for certain products of the farm during the year from Whitsunday 1885 to Whitsunday 1886; as also for information on other matters bearing on the question.

Accordingly, two series of queries were drawn up, and in June 1886 these were circulated.

In answer to this appeal, returns were received from 122 Producers, and from 170 Consumers, these being very equally distributed over the different districts of Scotland.

A condensed summary of the information contained in these returns was prepared by the Committee and submitted to the Directors, with the recommendation that it should be made public.

The Directors, believing that the object of the inquiry will be thereby promoted, resolved to publish the report of the committee in the *Transactions* of the Society for 1887.

1. *The Price received by Producers, and the Price paid by Consumers for Farm Produce.*

The following queries were addressed to Producers:—

What do you consider to have been the average price per stone of 14 lbs. which you have received, after deducting expenses of marketing, for really prime fat Cattle (steers and heifers), from 26th May 1885 to 26th May 1886?

What do you consider to have been the average price per pound which you have received, after deducting marketing expenses, for prime fat wether or young Sheep, for the same period?

What was the average price you received for lambs per pound, from 1st June to 1st October 1885?

What is the average price you have received, after deducting expenses of marketing, for Milk (new) per gallon of four imperial quarts, from 1st March to 30th September 1885? Also from 1st October 1885 to 28th February 1886?

What is the average price, per cwt., you have received for Cheese, after deducting expenses of marketing, during the past twelve months?

State the average price received by you, or by breeders in your neighbourhood, during the last twelve months for the following, sold for food?—

Turkeys, per pound?

Geese, ?

Eggs of ducks and hens, per dozen?

What price have you received during the past twelve months, after deducting expense of marketing, for Potatoes, per ton, for table use?

The following queries were addressed to Consumers:—

What prices have you paid during the twelve months, from 26th May 1885, for the following farm produce?—

For roast Beef, per pound	
For steak " "	?
For boiling " "	?
For knuckles and shins, per pound	
For legs of Mutton, "	?
For shoulders "	?
For quarters "	?
For chops "	?
For quarters of Lamb, "	?

Note.—In the case of lamb, let the price paid only embrace the months from June to October.

For new Milk, per imperial quart, during winter?
For do., per imperial quart, during summer?
For Cheese, Scotch, per pound?
For Turkeys and for Geese, per pound?
For fresh-laid hen Eggs, per dozen?
For Potatoes, per stone of fourteen pounds?

The information received in answer to the foregoing queries will be found summarised in the accompanying four Tables. These have been prepared in such a way that the difference between the prices received by Producers and the prices paid by Consumers can be readily compared and appreciated. For the sake of additional interest, the returns have been classified in districts. The Midland district, embracing the counties of Haddington, Edinburgh, Linlithgow, Lanark, and Renfrew; the South-East district, the counties of Berwick, Roxburgh, Selkirk, and Peebles; the South-West district, the counties of Dumfries, Kirkcudbright, Wigtown, and Ayr; the North-Central district, the counties of Fife, Forfar, Perth, and Stirling; the North-East district, the counties of Kincardine, Aberdeen, Banff, and Nairn; the North district, the counties of Inverness and those lying further north. Orkney has been given separately, as being perhaps somewhat exceptional.

In order that an intelligent comparison may be made of the prices received by Producers and the prices paid by Consumers for butcher meat, as given in Tables I. and II., it must be borne in mind—(1) that the prices given by Producers are only for the best quality of fat cattle and fat sheep; (2) that Producers quote the prices they have received as at so much per stone or per pound for the clean carcase, after the animal is slaughtered and dressed, ready for hanging up in the butcher's shop; (3) that because the value of the "fifth quarter," or offal obtained in slaughtering, viz., the hide or skin, the head and feet, the inside tallow, &c., is generally admitted to be sufficient to cover all expenses, and to leave over and above a fair profit to the retail

TABLE I.

Prices which Producers report they have received for best quality of Fat Cattle per stone, or per pound of dead weight of Beef, during the twelve months from 26th May 1886 to 26th May 1886.				Prices which Consumers report they have paid for the various descriptions of Beef during the twelve months from 26th May 1886 to 26th May 1886.							
Districts of Scotland.	Number of those who report in each District.	Average of the prices these say they have received.		Number of those who report in each District.	Average of the prices these say they have paid for						Average price paid for whole dead weight of Animal. See <i>Note</i> .
		Per st.	Per lb.		Roast.	Steak.	Boiling.	Shins and Knuckles.	Per lb.		
Midland	13	7	11½	6½	Per lb. 10½	Per lb. 1 1½	Per lb. 8½	Per lb. 6	Per lb. 8½		
South-East	18	7	10½	6½	10½	1 0	8½	5	8		
South-West	21	7	10	6½	10½	1 0	8½	5	7½		
North Central	23	8	1½	7	11½	1 1½	8½	6½	8½		
North-East	14	7	11½	6½	11	1 1	8½	5½	8½		
North	10	8	2	7	10½	1 0	8½	5½	8		
Orkney	6	7	2	6	9½	0 11½	8	3½	7½		
Totals.	105	55	0	47	74½	7 3½	59½	37	56½		
Averages for Scotland . . . . .	...	7	10½	6½	10½	1 0½	8½	5½	8	

Note.—The prices stated in last column are calculated according to the best information obtainable, that on the average from the dressed carcasses of an ordinary prime Fat Steer or Heifer the following proportion of the different descriptions of Beef are sold by retail Butchers—namely, 18 per cent. of Roast, 17 per cent. of Steak, 38 per cent. of Boiling, and 14 per cent. of Shins, &c., the waste and loss incurred in retailing amounting to 13 per cent.

TABLE II.

Prices which Producers report they have received for Prime Fat Wether, or Young Sheep, and Lambs per lb.; the former from 26th May 1885 to 26th May 1886; the latter from 1st June to 1st October 1885.					Prices which Consumers report they have paid for the various descriptions of Mutton and Lamb per lb., the former during the twelve months from 26th May 1885 to 26th May 1886; the latter from 1st June to 1st October 1885.						
Districts of Scotland.	Number of those who report in each District.		Average of the Prices these say they have received for		Number of those who report in each District.	Average of the prices these say they have paid for					
	Sheep.	Lambs.	Sheep per lb.	Lambs per lb.		Legs per lb.	Shoulders per lb.	Quarters per lb.	Chops per lb.	Quarters of Lamb per lb.	
Midland . .	11	6	d. 7½	d. 6½	22	d. 10½	d. 9½	d. 10	d. 11½	d. 11½	
South-East .	18	7	8	10½	26	10½	9½	9½	11	1/	
South-West .	21	5	8½	8	30	9½	9½	9½	10½	11½	
North Central	19	10	8	9½	33	11	10	10½	11½	11½	
North-East .	8	5	8½	9½	14	10½	8½	8½	10½	11	
North . .	6	2	8	9½	18	9½	8½	8½	9½	11	
Orkney . .	7	4	6½	6½	13	9½	7½	7½	10	10½	
Totals.	90	39	54½	60½	156	71	63½	63½	75½	78½	
Averages .	...	...	7½	8½	...	10½	9	9	10½	11½

Note.—A similar column to that given in Table I. for Fat Cattle, stating the average price paid by Consumers "for the whole dead weight of Animal," is not added, as the price paid for Quarters sufficiently represents what Consumers may be said to have paid.

TABLE III.

Prices which Producers report they have received for Milk and Cheese, from 1st March 1885 to 28th February 1886.										Prices which Consumers report they have paid for Milk and Cheese, from 1st March 1885 to 28th February 1886.									
Districts of Scotland.		Number of those who report in each District.		Averages of the prices these say they have received for Milk per gallon.		Cheese per lb.		Number of those who report in each District.		Average of the price these say they have paid for Milk per gallon.				Cheese per lb.					
										From 1st March to 30th Sept.		From 1st October to 28th Feb.							
		Milk.	Cheese.	d.	d.	d.	d.	s.	d.	s.	d.	s.	d.	d.	d.				
Midland	2	0	8½	...	d.	5	12	1 2	1 4	8½									
South-East . . .	1	0	8½	...	...	12	13	1 3	1 2	8½							
South-West . . .	9	10	5¾	7½	5½	13	21	0 11	1 0	7¾									
North Central . .	8	0	8½	8½	...	14	16	1 2	1 3	9									
North-East . . .	5	0	9	10¾	...	11	5	1 4	1 5	10									
North	2	0	8	10	...	5	6	1 4	1 4	10¾									
Orkney	2	0	8½	...	...	6	4	0 10	1 0	7½							
Totals	29	10	56¾	36½	5½	66	77	8 0	8 6	62½									
Averages . . .	...	...	8	9	5½	...	...	1 1¾	1 2½	8¾					

TABLE IV.

Prices which Producers report they have received for Turkey, Geese, Eggs, and Potatoes, from 26th May 1886 to 26th May 1886.									
Districts of Scotland.	Number of those who report in each District.				Average of the prices these say they have received for				
	Turkeys.	Geese.	Eggs.	Potatoes.	Turkeys per lb.	Geese per lb.	Eggs per doz.	Potatoes per stone.	
Midland . . .	0	0	7	8	d. ...	d. ...	s. 1 2	d. 4	Potatoes per stone.
South-East. . .	5	2	6	8	9½	8	1 0½	4	d. 4
South-West . .	4	3	7	12	7½	6½	0 11½	3	d. 4
North-Central. .	4	2	16	22	9	6	1 0½	3½	d. 4
North-East. . .	2	1	10	9	7½	7½	0 10½	3½	d. 4
North . . .	1	1	5	5	6½	5	0 8½	3½	d. 4
Orkney . . .	0	1	11	5	...	5	0 7½	3½	d. 4
Totals . . .	16	10	62	69	39½	38	6 5	24½	d. 4
Averages . . .	..	...	...	...	7½	6½	0 11	3½	d. 4

Prices which Consumers report they have paid for Turkey, Geese, Eggs, and Potatoes, from 26th May 1886 to 26th May 1886.

Number of those who report in each District.

Average of the prices these say they have paid for

Turkeys per lb. Geese per lb. Eggs per doz. Potatoes per stone.

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butcher, the consuming public may fairly expect that they shall be charged no higher price per pound on the average for butcher meat, taking the proportions of the different qualities of meat into account, than the butcher pays per pound for the whole dead weight of the animal he buys alive from the feeder. It is in order that the prices actually paid by Consumers for the whole weight of butcher meat obtained from a fat ox might be shown, that the prices under the last column in Table I. have been prepared and stated; (4) that the great majority of the Consumers report that the prices they quote are for ready money. Of the total informants, 81 say they pay ready money, 38 say they pay monthly, 22 say they pay quarterly or half yearly, and 4 say they pay once a year.

Further, it may be right to take notice that these returns are for a period which expired in June of last year, since which time the price of fat cattle has fallen nearly, if not quite, 1s. 9d. per stone.

Prices received for the finest Wheat, and the price charged for the four-pound Loaf.

The following queries were addressed to Producers:—

What price have you received during the past twelve months, after deducting expense of marketing, for the finest Wheat, per quarter, suitable for producing the best flour for baking purposes?

Give details, if you can, of the produce from a given measure and weight of wheat, grown by you, of finest flour, of coarse flour, and of bran? State also the number of ordinary four-pound Loaves produced from 20 stones of best flour?

The average of the prices which the thirty-two Producers who answer the first query report that they have received is 29s. 7d. per quarter. The average yield of fine flour from a quarter of wheat, weighing 63 lbs. per bushel, is said, taking the average of the five informants who report, to be 359 lbs., enough to make 119 four-pound loaves. The bran and second flour obtained in the manufacture of wheat into flour is sufficient to pay all milling expenses, consequently the cost of the flour required to make a four-pound loaf is 3d. The price of the four-pound loaf during the twelve months of the inquiry has been rather above than below 6d.

2. Expenses incurred in transference of Farm Produce from Producers to Consumers.

The following queries were addressed to Producers in regard to fat cattle, sheep, and other farm produce:—

What additional cost was added to their price in railway expenses, &c., commission, &c., after leaving your hands, and before being offered for sale to the consumers?

How many hands did these pass through?

The answers received in reply to these questions naturally show considerable discrepancy, because of the difference in the methods of disposal and in the distance to which the products were sent to the retail market. The costs incurred in railway carriage and in commission to auctioneers, agents, &c., are variously reported as being, in the case of fat Cattle, from 2d. to as much as 1s. per stone, and the number of hands they pass through as from one to as many as seven. The same conditions are shown to attach to fat Sheep and Lambs. With regard to dairy produce, the cost in transit of Milk from Producer to Consumer is reported to vary from nothing at all to as much as 4d. per gallon, and the number of intermediate hands it passes through from none to two. Cheese, again, is said to pass through from one to three hands, and to incur in costs from 2s. to 15s. per cwt. Potatoes are reported to pass through a like number of hands, and to incur in expenses of transference from the Producer to the Consumer from 2s. 6d. to as much as 35s. per ton.

Let it be remembered that Scotland produces very much more of butcher meat and of potatoes than its population consumes, and it is when these products have gone long distances into England or elsewhere that the maximum figures given by some informants have no doubt been incurred. It must be noted, however, that, in so far as the prices given in the foregoing Tables are concerned, the costs said to have been incurred in transference from the Producer to the Consumer cannot be held to apply, because there the prices received and paid are for the same districts, and consequently there should be almost no costs added in transference. Any increase shown in the prices paid by Consumers over those received by Producers must be set down as almost wholly profits of retail traders.

3. Range in the Prices received by Producers for Fat Cattle and Sheep during the Twelve Months.

The following query was addressed to Producers:—

Please give any information you can as to the range of prices during the twelve months?

In reply, informants state that in fat Cattle the prices varied during the period embraced in the inquiry as much as 1s. 9d. per stone, viz., from 9s. per stone in the month of July to 7s. 3d. in the month of March. Sheep, again, are reported to have varied in price as much as 3d. per lb. The best quality of fat sheep which were selling in their wool in March and April at 7½d. per lb. were selling in May and June out of their wool as high as 10d. per lb.

4. *Sale of Fat Cattle by actual Live Weight.*

The following query was addressed to Producers :—

Do you think the adoption of a system of selling fat cattle by live weight, so much per stone of actual gross weight as proved by the scales or steelyard, would be advantageous to feeders ?

Out of 82 who made answer, as many as 65 express themselves as favourable to the adoption of the system, many of them in the very strongest terms; while only 17 made unfavourable replies, and some of these are only expressions of doubt as to its proving very beneficial.

5. *Support by Consumers to Centres of Supply, sent directly by Producers.*

Consumers were asked—

Would you be prepared, if supplies of farm produce were sent directly by farmers, and offered for sale at convenient centres in the town, to send for them and pay cash for them, provided the prices charged were considerably lower than those you now pay, and the articles equally good ?

Of 93 informants who reply, as many as 87 answer "Yes," 3 won't pledge themselves, and 3 say "No."

6. *How the Producer and the Consumer can be brought into more direct dealings with one another.*

The following query was addressed alike to Producers and to Consumers :—

Make any suggestions which you think would tend to equalise the prices received by Producers and the prices paid by Consumers; how they could be brought into more direct dealings with one another, and intermediate expenses of transference lessened.

The answers returned are so many and so varied, and also so discordant, that any true summary, while almost impossible, could serve no practical purpose. The only suggestions made with any degree of unanimity are on the lines of Co-operation, which has proved so successful in many instances in lessening expenses of transference and in reducing prices paid by Consumers. None of the informants, however, attempt to show how such a system could be practically put in operation. Several informants look to an amelioration of the evil were railway companies induced, or compelled, to reduce their charges for carriage of home produce; while others think that, in so far as butcher meat is concerned, the adoption of the system of selling by actual live weight would tend to equalise the prices received by Producers and those paid by Consumers.

THE DUNKELD LARCHES.

EXCERPT Letter from Warren Hastings to the late Mr Anderson of Wilton Lodge, dated Dalesford House, 4th September 1810.

"I thank you for the pleasure which you have afforded me by the information of your safe return to your delightful home. . . . Accept my thanks too for the copy of the Duke of Athole's report of his larches. This is most curious and interesting. When I was in Scotland in the year 1787, and made the tour of the southern Highlands, which you may remember, I either myself measured the girth of the greatest larch at Dunkeld, or received from the gardener his assurance of the measure of it sufficiently authenticated; for I recorded it as a fact in my journal, which I still keep. It was then, at 2 feet from the ground, 9 feet in circumference. In the Duke's report the same tree is mentioned as measuring, at $3\frac{1}{2}$ feet above the ground, about 12 feet in circumference, so that it must have increased in girth 3 feet in 19 years and 8 months; which is an astonishing instance of rapid vegetation in a tree of solid wood, and a proof of the superiority of larch to oak for the planter, however the latter may exceed it in the purposes of its ultimate application. The fact recorded in this paper, that larch will thrive in barren eminences where oaks will not grow, nor I believe any other tree, deserves to be generally known."

NOTE BY THE EDITOR.

With reference to above extract of letter, it should be stated that Mr Pringle of Wilton Lodge, on going over some papers of his father-in-law, the late Mr Anderson of Wilton Lodge, who returned from India towards the close of the last century, found one addressed to him by Warren Hastings. As this is undoubtedly an authentic statement, Mr Pringle thought it might be deserving of record in the *Transactions* of the Highland Society. Any circumstance that throws light upon the history of the larch he considered to be of interest to the members of the Society.

As it is believed that Warren Hastings' is the earliest recorded measurement of these most remarkable trees, the Committee on Publications had much pleasure in recommending that the extract letter should be published in the *Transactions*.

F. N. M.

SILAGE MADE IN PITS AND STACKS AND SWEET AND SOUR SILAGE. With INTRODUCTION by Dr A. P. AITKEN.

The making of ensilage is now so general all over the country, and the success of that method of preserving fodder is so abundantly attested in the voluminous returns published by this Society and others, that it did not appear to the Ensilage Committee that any further inquiries on the lines of the former one were required at present, but it seemed to the committee that there were three heads under which it was desirable to obtain further information as soon as possible, viz.:—

1. SILAGE MADE IN SIMPLE PITS ; including the mode of making, the uses, economy, and success of the process.
2. STACK SILAGE ; including the method of making and preserving it, with special regard to simplicity and cheapness ; also the relative economy of stack and silo silage.
3. SWEET AND SOUR SILAGE. The relative value of these two kinds of silage, as illustrated by the results of experiments with feeding or dairy cattle.

Accordingly, schedules were prepared asking information in these terms, and they were sent to all who had formerly supplied information on the subject of silage. Upwards of thirty replies have been received ; but fully one-third do not contain information of a complete kind, as up to the date of their returning the schedules the correspondents had not yet made an opening into their silage. Altogether there are twenty returns with information that is more or less complete and specific, and as they are not long, it has been thought expedient to publish them almost *in extenso*.

The first query was made with the hope that some experimenters might have made silage in simple pits, dug in the earth with or without any lining or other fittings, and covered only with a part of the earth that had been excavated. It was evident from many of the returns made last year, that the chief obstacle to making silage, especially on hill farms, was the expense and difficulty of constructing a silo. Experience in other countries had shown that a mere hole in the ground, neatly made, well rammed with grass, and loaded with earth, was all that was necessary in order to preserve fodder, and the committee were anxious to know if such a simple process had been adopted in this country for hill stock, and if it was a success.

There are several reports of such silos, and they will be found of interest to hill farmers.

It was also noticed in the returns sent in last year that there were very few who were able to record their experience of stack ensilage, and it was hoped that this year some progress might be recorded in that matter. The information received shows that

there is no difficulty about making stack silage, and the opinion seems to be that it is cheaper to make and quite as successful in its result as silage made in a silo.

As regards the relative merits of sweet and sour silage, there are few experimenters who are able to give any information. It would seem that both sweet and sour silage may occur in the same silo, according to the dryness of the material stored and the temperature attained in the filling, and that the owners are indifferent as to the sweet or sour character of the silage. They do not as a rule trouble to inquire about temperature, but are content to let the stuff take its chance, and they are quite satisfied with the result, whether sweet or sour or intermediate. It is claimed for sweet silage that it is not unpleasant to smell, some say rather pleasant, and that is doubtless an advantage, but it does not appear to be one that the cattle themselves appreciate, for they not only take to sour ensilage very greedily, but they are found to prefer the sour to the sweet, when the two kinds are simultaneously offered to them.

The most important information on this subject is supplied by Mr Mackenzie of Portmore, who, in order to test the relative merits of sweet and sour silage, filled two neighbouring silos at Earlypier with grass cut from the same fields, but managed the filling in such a way as to produce in the one case sweet, and in the other case sour silage; and the same thing was done with two neighbouring silos at Harcus. On 22nd January the two silos at Earlypier had been in use for some weeks, and as the whole cut face of the silage was exposed, I took samples at three different levels—one 3 feet from the top, one 3 feet from the bottom, and one intermediate. A shaving was, in the first place, taken off each face, so as to expose a fresh surface for sampling; and each sample, as it was cut off along its particular level, was caught on the clean floor of the silo. It was then thoroughly mixed together, and a fair sample was chosen, and pressed into a tin box for transmission to the laboratory.

The results of the analyses of these six samples are given in Mr Mackenzie's report (page 352), and they afford information of some interest. It will be seen that the bottom sample from each of the two silos contains the most moisture, and that the top samples are the driest. This is not due to any soaking downwards of moisture, but simply to the fact that the bottom samples consist of younger and therefore juicier grass, while the top samples consisted of grass which had in a great measure become ripe before it was cut.

The similarity in the moisture of the sweet and sour silage at Earlypier is a somewhat unexpected circumstance.

Considering the high temperature attained by the sweet silage, we should naturally expect that there would be very considerable loss of moisture by evaporation. The stuff was so hot

that, when it was dug into one or two feet below the surface, a cloud of steam was seen to rise; but if the surface was left undisturbed, there was hardly any visible escape of steam. It was noticed that during the intervals of filling the top layer of silage became very wet, and this explains why there was no greater comparative loss of moisture. The steam, on escaping from the hot layer a few feet down, was cooled as it rose through the mass, and was in great measure condensed upon the upper layer.

But the most interesting thing regarding these samples of silage is the composition of the dry matter. It will be seen that there are marked differences in the composition of the silage of both silos at the three different levels. The albumen is most abundant in the young grass at the bottom, and least in the ripe grass at the top. The ether extract, which consists largely of chlorophyll, is also more abundant in the younger grass, and so is the ash. The carbohydrates, on the other hand, are more abundant in the riper grass of the upper layer. The very marked superiority as regards albumen in the silage made from the younger grass is a circumstance well deserving attention. The bottom samples are very nutritious fodder, on which an ox might fatten; while the top samples have not much more than half that feeding value, and when eaten alone could not fatten an animal. It therefore appears that in a slowly-filled silo there is a choice of fodder of varying nutritiousness, capable of being used for different classes of stock, according as a more or less nutritious diet is desirable. There is no doubt some loss of bulk in cutting grass early, but careful experiments have shown that that loss may be more than compensated by improvement in quality.

These analyses of the two kinds of silage, sweet and sour, are not quite comparable with each other, as they do not refer to silage of the same date of filling, so that they give no answer to the question, whether sweet or sour silage is the more nutritious and profitable to make. The samples were taken according to their position in the silos, and quite irrespective of the age of the grass from which they were made.

But it was very desirable that analyses should be made of samples of silage of the sweet and sour kind consisting of the same grass filled on the same day. The opening of the second Marcus silo presented that opportunity. Accordingly, on 8th March, samples of sweet and sour silage which had been put into both silos on 6th September were taken, and a sample of the Earlypier sweet silage was also selected, which was synchronous with the middle sour sample taken on 22nd January. These were analysed, and the results are given in the second table of Mr Mackenzie's report. The Earlypier samples are seen to differ very little in moisture—only 1 per cent.—but the Marcus sweet silage contained fully 8 per cent. less moisture than the sour. It had

a very pleasant smell, and well deserved the name of sweet silage. The analyses of the dry matter (p. 353) shows that the two kinds of silage differ very little in composition. The sweet silage has the advantage over the sour of containing something under a half per cent. more true albumen, but this advantage is counter-balanced by its containing about 2 per cent. less carbohydrates and about 3 per cent. more woody fibre. The chief difference between the two sets of analyses is the small proportion of water in the Marcus sweet silage. It is quite possible that this may be due to circumstances apart from the ensiling process. The accident of the one being made of grass cut in the morning with the dew on it, and the other being cut after the sun had dried it, might be sufficient to account for such differences as are found in these two samples.

Upon the whole, it would seem that there is very little difference between sweet and sour silage, but what little difference there is is in favour of the former.

As regards the general question of ensiling, there is one thing evident in these returns, which must be satisfactory to all who have found that the chief obstacle to the system is the trouble involved in the weighting. It seems that this is now almost entirely overcome. It is found that if a silo is filled slowly, and not every day, but at intervals of several days, the stuff heats and sinks rapidly, so that if a silo is divided into three parts, by means of fixed partitions, or if there are three silos, and if each part or silo is filled in turn little by little, there is distinct saving of trouble in the matter of weighting.

Another very important matter which must be brought home to all who read these returns is the great value of the ensiling system, not only as a means of preserving good fodder, but of enabling us to make use of much inferior feeding material which would otherwise be permitted to go to waste. Coarse grasses from woods, hedgesides, and roadsides, sprouts and coarse rushy stuff which cattle refuse while pasturing, and even such unpromising material as brackens if cut in the young and juicy state, form a useful and even an attractive fodder when softened and cooked in the silo.

ABERDEENSHIRE.

1. GEORGE BAIN, Old Mill Farm, Aberdeen.

Mode of making Ensilage.—Fodder chaffed and trodden down by men and boys as filled; corners and side walls carefully packed. First filling, weather good. Grass and green corn put in as cut. Second filling with aftermath cut the previous day, quite wet with rain. Ensilage when taken out six months after was in excellent condition. A sample was exhibited at the Royal Northern Agricultural Society's Show at Aberdeen in February 1886, and was much admired.

Uses.—Used the ensilage to store and feeding cattle and sheep, with the best results. Gave each animal about 15 lbs. per day of ensilage, along with a little draff; sheep got about half the above quantity. All the stock seemed very fond of the fodder, and thrive very well on it. I observed they did exceedingly well when put out to the grass after being fed with well-cured ensilage.

Most economically used with other kinds of food. There is a good deal of saving and economy in making the various kinds of grass into ensilage; rough fodder that could not be used for any other profitable purpose is made into valuable food, and is as palatable as the best clover grass on the farm when green.

Sweet or Sour.—Has all been tainted with a sour taste, but very pleasant, and, if given in moderate quantities, would not affect the dairy produce—would rather improve it.

2. Colonel INNES of Learney, Torphins.

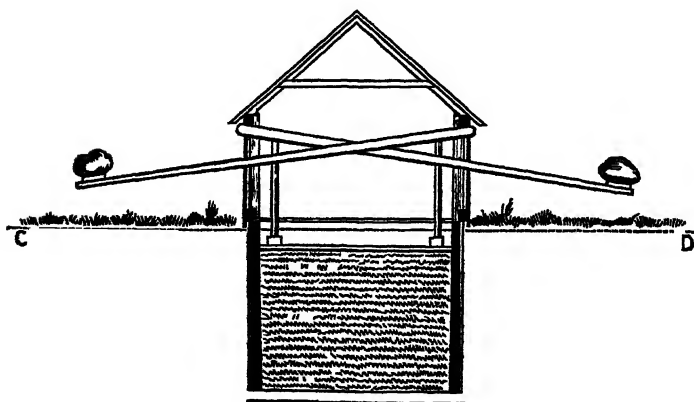
2. As to "simple pits."—Last year (*i.e.*, the silage was made in 1885, and used in March 1886) I tried the experiment of putting the clover aftermath (1) in a heap in the field, covered first with the sods, and above that with about 18 inches of soil; (2) heaped against a 5 feet enclosure dyke in the field, and covered in the same way. The quality of the ensilage was very good, fully as good as that made in the regularly constructed silo. But my impression was that, taking all the labour of covering these "field pits or heaps" into account, there was little or no advantage in them over a properly constructed silo; so I last year (1886) constructed a second silo, within easy cartage of the fields in question; and as from previous experience I was enabled to perfect a most simple, convenient, and economical system of pressure, I will give the details of the construction of the silo.

The silo is 12 feet by 13 feet and 9 feet deep. It is excavated in a sloping bank of hard gravel; the sides are lined with cement concrete about 6 inches thick. Six stout larch pillars, about 6 inches diameter at the small end, are worked into the cement lining—four at the corners and two intermediate at the sides. These pillars stand about 4 feet above the top of the lining, and stout bars of ripped larch are securely nailed to the pillars at each side of the pit, *viz.*, one bar at the top of the pillars and one where they rise out of the lining. On these bars are nailed 1-inch covering boards, which serve both to keep out wet and also to bind down securely the upper bars, which are used as the fulcrum for the pressure of the ensilage; finally, a light wooden roof is constructed.

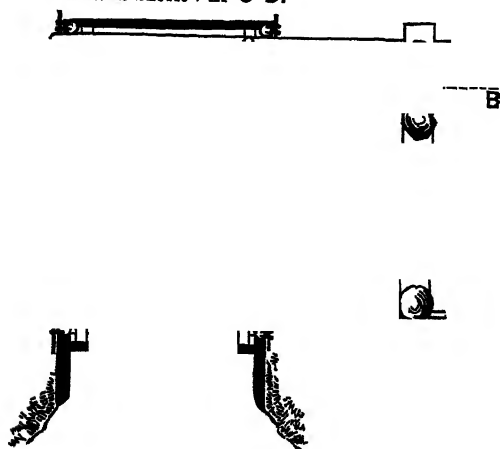
The pressure is applied as follows:—At each side two openings are left in the covering, through which two levers pass from the outside and extend across the silo to the opposite side, where the ends go under the cross bar at the top of the pillars, and by

placing short posts under the levers within 2 feet of this fulcrum, and weights at the ends of the levers outside, any required pressure can be obtained, *and will be continued although the ensilage sinks.* Thus there are four levers, two on each side, bearing with this pressure upon two beams which cross, one on each side, the planking which covers the ensilage when not in use, *i.e.*, when the silo is being filled, the ends of the levers outside are propped up, and they are not in the way. When the pressure is wanted, a plank is put across the ends of the levers outside and loaded with stones. A rough sketch of sections of the silo is annexed, to explain more completely the method of applying the leverage.

VERTICAL SECTION AT A B.



HORIZONTAL SECTION AT C D.



3. *Sweet and Sour Silage*.—So far as my experience goes, it is not possible to distinguish very accurately without analysis the precise quality of the silage as sweet or sour; but I have observed very great differences in the kinds of green forage which I have employed, in their readiness to ferment, and their ability to maintain the fermentation under different degrees of pressure—*ex. gr.*, for two years I have employed grass and clover aftermath, without any difficulty or failure. The pressure was put on as soon as convenient after filling the pit, and the result was a compact mass, weighing up to 60 lbs. per cubic foot, and resembling in colour and substance boiled kale; but the year before last, having some tares and green corn to spare, I put a layer into the silo, and was disappointed by finding that it had rotted, and was a decomposed black mass. I attributed this to the fermentation having been too early checked by the pressure; and this year I filled my new silo entirely with tares, which had been grown as usual with a mixture of corn, and in filling the pit was careful, before applying the pressure, to allow the heat of fermentation to rise to a very high temperature. The result is satisfactory, the ensilage is of fair quality, and a flock of breeding ewes has been on it for a month. But I am inclined to think that it would be better to allow the tares to come more to maturity than they were when put in last year, and I attribute the sluggishness in fermentation partly to the quantity of water in the immature tares. Also as the shepherd remarks that the ewes reject the oat straw, although it was quite green when put in, I will try to grow the tares without it.

3. ALEXANDER STUART of Laithers, Turriff.

Stack Silage—Having, in 1885, unsuccessfully tried a stack silo, resulting from reasons supplied to the Highland Society, I last July thought I would make another attempt, and I am glad to be able to report it is a success. About the middle of July commenced to cut grass from woods, road and river sides, lawns, and from fields left uneaten by cattle. This was put up in stack as was convenient, four or five days often intervening between the additions. The found of stack was that of an old hay-stack, formed of stones, with a load or two of gravel to fill up the interstices. Area of stack, $8\frac{1}{2}$ feet by 10 feet. Twenty-two loads (not large) were stacked between the middle of July and middle of August, as obtainable, and whether wet or dry, and no weight was put on until the whole was completed. When finished it stood about 17 feet high, including the fern and straw thatch, with larch boards above, and some stones for weights over all. The stack sank by degrees as it was added to, and after being completed and standing for a month or so, it

was reduced to about 8 feet high. On the 23rd December the first cut was taken from it, when it was found that only about 5 inches of mouldy ensilage rested on the top and about 6 or 7 inches on the sides. The colour varied somewhat with the various layers of different grass, but no water had got in, and some parts smelt more pungent than others. It was given to cows, a young heifer and calf, and some sheep, and all relished it, particularly the cows and heifer, who ate it greedily. I also gave some to a friend, whose cattle liked it, particularly the young stock. The simplicity of method is a great recommendation, as no weights were added until the whole was finished; and, irrespective of weather, additions of materials otherwise lost were made to it by degrees as opportunities and convenience offered. It has been a boon during the present severe weather. The ensilage had a very beneficial effect on the supply of milk; for one of my Alderney cows, which had fallen off from 8 Scotch pints a day to about $6\frac{1}{2}$, rose again when given the ensilage to the 8 pints, viz., 33 lbs. of milk making close on 2 lbs. 6 oz. of butter per day.

ARGYLLSHIRE.

4. J. S. AINSWORTH of Ardanaiseig, per G. W. Hartley, Tirvine, Inveraray.

The ensilage made here has proved so valuable that the silos have been increased to five.

$$\begin{array}{l} 2. \left\{ \begin{array}{l} 2. \quad 10' + 10' + 7'. \\ 1. \quad 41' + 11' + 12' \text{ in two divisions.} \\ 1. \quad 24' + 14' + 14'. \end{array} \right. \end{array}$$

1. The first four are built of stone or brick, lined and floored with cement, and weighted with Reynold's Patent. From 250 to 300 lbs. per square foot.

The last one was made in October, when the weather became so bad that there seemed no probability of making hay. It is merely a portion of a barn—the partition being made of inch battens, a double line about 5 inches apart, with sawdust rammed down between. It is quite air-tight. The material—much of which was very coarse rushy stuff—was put in, and very well trodden, and weighted with about 100 or 120 lbs. per foot with stones, and seventy old manure bags filled with sand. These were easily hauled up with a block and tackle. The air-holes at the side were built up with clay and stones, and the silo is quite air-tight, and the cost was small. So far as can be told, the ensilage is doing well. The material was allowed to heat for three days.

3. The silage we have made for the last three years has been

so good that we have not attempted to make it in any other way than by *heavy pressure* at once. I have seen some accounts of making it where the success was attributed to not treading the silage very much, but my experience is opposed to this, and I have found that by using plenty of trampers, especially in the angles of the silo, we were able to utilise every bit of the silage, and have literally no waste at all.

4 Silos have been of the greatest possible benefit to us during the past wet autumn, and we intend in the coming year to largely increase them, and in a great measure to dispense with turnips. Hay-making was most laborious, expensive, and unsatisfactory work.

5. THE DUKE OF ARGYLL, K.G, per David M'Gibbon,
Ardnacraig, Campbeltown.

1. *Two Pit Silos*—One, below surface of ground, 23 feet 6 inches long by 11 feet 6 inches wide by 7 feet deep, filled with timothy and natural grasses cut before ripe, and chaffed as put into silo, weighted at once to 80 lbs. per square foot of surface by means of wooden boxes filled with gravel of a cwt. each, with rope handles, so that these are easily handled for shifting or removal for filling up as contents of pits subside. (Sour silage.)

The other pit, partly under surface, 28 feet by 5 feet 10 inches by 6 feet. Both pits are formed of cement concrete, and have means of drainage, but kept tight until silage is used up. This second pit I have filled this season with second cut of same grasses as first pit is filled with, but put in when very wet from rain, allowed to heat up to 140°, then weighted to 120 lbs per square foot of surface. Have examined both pits. The contents are perfectly well preserved, and smell nicely of their sorts. This is the third season I have used them, and all the cattle I have fed with it thrive well and take the silage freely, but I cannot say it is better than good hay chaffed and fed with same way. I filled one in June, the other in October.

Both pits are filled with grasses that were forced by irrigation in a large degree with pot ale or refuse run from distilleries, hence very succulent, and, although it rained nearly the whole time the second crop was being cut and stored into pit, the sample drawn from it the other day is thoroughly preserved, and proves to be sweet silage. Two milk cows, kept for supply of milk, &c, for our own household, are fed on silage when in use same as other cattle, and find that both cream and butter improve in quality and appearance rather than the reverse while cows get silage.

6. WALTER ELLIOT. Ardtornish, Oban.

This is the third year we have had a silo, and I must say it gains in my estimation every year, and I should not like to be without one now.

I have been using this season's silage for about a month now. It is very good, and the cows and stirks eat it very greedily, and in previous years they have summered well afterwards.

I use principally meadow grass for making silage, but this year I put in also about 20 tons of oats which were lodging, and would have spoiled the young grass. The oats are mixed through the grass anywhere, and are coming out in very good order. I also mix in along with the grass ten or a dozen loads of brackens these last two years, cut in the end of June or first week in July, when the first filling takes place. They do very well also, and cattle eat them, although generally eating the grass silage out of the feed first.

7. JAMES N. FORSYTH of Quinish, Tobermory.

1. Ensilage has with me been uniformly successful and satisfactory. My remarks in reply to questions by the Privy Council in 1885 (see Report, page 253) can all be confirmed by my subsequent experience.

For the last two years I have filled my silo more slowly than in above-mentioned report, and this last season I used much less weight—not more than 50 lbs. per square foot of surface. I have obtained silage of at least as good feeding value as before, with very little smell and less acidity.

Silage has proved with me a very good food for wintering blackfaced hogs on.

3. I am inclined to suspect that the slow filling of my silo for the last two seasons has resulted in something near sweet silage, but I am of opinion that no sharp line of division can be drawn between sweet and sour silage. The extremes of both are very different, but there are endless intermediate qualities.

My silo is long, narrow, and deep, with smooth cemented walls. The trap soil of this district grows fine, thick-growing, and rather short grass of all kinds. Under these conditions I do not believe that I can make really sweet silage. The stuff will subside and compress itself too quickly to allow of a great rise in temperature, fill I never so slowly. With coarse, strong stemmed stuff it will be different, and I believe that sweet silage is better than sour. It is more attractive to look at; the absence of smell is a great point, and, as far as I can judge, it produces as good milk as the other. There is also less risk of milk becoming tasted through carelessness of dairymaids.

8. JOHN MALCOLM of Poltalloch, per W. J. B. Martin,
Ri-Cruin, Lochgilphead.

1. *Silage made in Simple Pits.*—This was the mode I adopted at first. I described the pit in a previous report. The silage was good, and was readily eaten by Highland cows, the only stock to which it was given. Dr Wallace analysed a sample and reported very favourably on it; there was rather an excessive amount of acidity. Rightly or wrongly, I attributed this to the presence of too much water, and I therefore made a

2. *Concrete Pit covered in with Willisden Paper Roofing.*—I did not have this silage analysed, but it seemed much the same as that made in the simple pit; a little less water in the grass ensilage. All sorts of cattle eat it readily. On the top of the silo I put some green oats which had been laid by storm, but they turned out badly, being almost entirely unfit for use. They were put in whole. Some people tell me I should chaff them for silage; as yet I have not tried this process.

3. I am fully persuaded that while ensilage will never do away with hay-making, it is a cheap food and a good substitute for roots, and I believe it will be most useful in the West Highlands, where turnips do not keep well.

AYRSHIRE.

9. J. M'KELVIE, Sundrum, Ayr.

1. The silage here has been made in silos built of bricks and Portland cement, air-tight, and drained—the drain to inside of silos trapped to exclude the air. The silage had been made of natural grasses only, part from roadsides and vacant grounds, and part from permanent grass fields. In 1883 and 1884 the pressure was applied every night after grass was put in. In 1885 and 1886 it was allowed to heat before it was pressed. The pressure was by water in tanks supplied from a line of water pipes, the tanks emptied when required by siphon pipes.

3. The silage in 1883 and 1884 was well preserved, but had a strong pungent smell; seemed to be fairly well relished by cattle. Being given to dairy cows it was considered to improve both the quality and quantity of butter, but to attain good quality frequent cleansings were found necessary. In 1885 and 1886 the silage was generally well preserved, but there was more waste at the walls and under the covering boards than in the two former years. The silage has a sweeter smell, but I do not think it is more relished by cattle than the sour silage, but no experiments between the two kinds have been made. In my opinion, well got hay is preferable to either, except for producing

milk, for which purpose part silage and part hay may be the best. I am clearly of opinion that for growing or feeding cattle good hay is preferable to good silage.

BANFFSHIRE.

10. J. S. FINDLATER, Balvenie, Dufftown.

For description of silo, see Agricultural Department's Return, 1885, page 263. An old kiln, 16 feet by 12 feet by 10 feet deep. Crop mixed tares, oats, and beans grown on clay where turnips will not grow. Cut, carted, and trodden—took four days to finish and load with stones about 200 lbs. to square foot. The crop was not chaffed as formerly. I think this an improvement. No salt was applied. The result is better than former years, when the whole was chaffed and filled in one day and loaded the next. It is less sour and less dark, and has less smell, but still a good deal. It could not be called sweet. There is scarcely any mould—an inch on top and a little white here and there on edges at floor and walls. All stock take it greedily. I am feeding it to breeding blackfaced ewes on the snow along with hay, and to feeding sheep with hay and oats. Both lots prefer it to hay. It has the advantage over turnips that it can be eaten in frost. I never used it alone with feeding or milking stock. I consider it cheaper and better feeding than turnips, and with plenty of dung I have had heavy crops of the above mixture year after year, over ten years, on clay that will not keep grass nor grow turnips or grain. I have no experience of stack ensilage, but intend to try it with wild grass next summer.

BERWICKSHIRE.

11. GEORGE YOUNG, West Blackadder, Chirnside.

This season I have both my silos filled, and have also made a stack. One silo measures 60 feet by 10 feet, another 36 feet by 17 feet, and the stack 40 feet by 20 feet.

All my silage this year and last is *sweet*, having been raised to a high temperature, certainly above 122 degrees, before loading. Having perused Mr Fry's book, I became satisfied that sweet ensilage was better than *sour*; and after a little practice we find the *sweet* more easily made than the *sour*.

Our mode of pressure is somewhat as follows:—We keep all three places going—the two silos and stack—beginning at any one, as No. 1, and fill up, say 3 or 4 feet; then leave this to rest and heat, going to No. 2, and do the same there, and so on to No. 3; and by the time this last has got the desired quantity placed, temperature is up in No. 1 to a satisfactory height, and

is therefore ready for a second filling; and by the time this is done we find No. 2 up in temperature, and ready for a second filling; and so we go on until all is filled up.

With the silo after being filled up, and even raised up a foot or two above the side walls, it is necessary to place on weights, so as to aid compression and sinking, and thus save from *overheating*.

With a silo we remove the load, and then refill as before; but one advantage of the stack form of ensilage is, that you can continue building until you have exhausted your material, or have attained the desired height, and then only one loading is necessary.

I cover with deals or slabs, and then load with stones to from 150 to 200 lbs. per square foot; and in one silo having *no roof* I cover with straw. The stack is covered in the same manner.

In passing it may be worth while to note the effect of loading upon the temperature. The silo or stack may be steaming all over like a kiln; but from the moment the load is put on this steaming ceases, and although the internal heat keeps up for even a month or two, as shown by the use of a long iron rod, yet there is no outward sign of such.

I give my ensilage to fattening cattle and milking cows, and they do well with it.

I grow a mixed crop for silage of beans, tares, oats, in equal proportions, and a few peas, and try to have a clover aftermath to put on as a finishing layer after harvest.

CLACKMANNANSHIRE.

12. W. J. HAIG of Dollarfield, Dollar.

I have a silo stack this season, compressed by Johnson's gear, supplied by the Aylesbury Dairy Company. It is 20 feet long by 14 feet in breadth, and the average height after compression is 8 feet. Cubic contents, 2240 feet.

In November 1885 I sowed 12 bushels of winter rye in 3 acres of light gravelly soil, from which potatoes had been removed. The winter being severe and prolonged, the plant came up rather thin. It was cut and built on the soil on the 21st and 22nd of June 1886, the weight being about 25 tons, and on top of it were built 14 loads of rough grass. Pieces of iron pipe were laid in the stack at intervals, into which a thermometer could be introduced to ascertain the temperature. The pressing gear was found to be very easily managed, and the temperature, which could speedily be checked by an increased pressure, was never allowed to exceed 140° Fahr.

On the 6th and 7th of July other 10 loads were added, and treated in the same way.

On the 16th of April 2 bushels of Scotch tares and 5 bushels of oats were sown on 2 acres of rather stiff soil. These grew luxuriantly, and were cut on the 23rd of August, just when the bloom was faded and the pods about to form. The weight of the crop was estimated at 24 tons. This was built on top of the grass, a few loads of grass put over it to serve as a thatch, and the pressure applied as before. The temperature in this case was found much more difficult to manage. It did not at any time exceed 140°, but remained near that point, without subsiding, much longer than in the case of the other material.

Very little juice escaped from this stack—a mere trifle compared with what flowed from its predecessor last year, when the means of pressure were much less efficient.

Wishing to get well through the turnip crop before commencing to use the ensilage, I did not cut the stack till the 12th of January, so that I can only report on the condition of the outside cut, which is as follows:—

(1) *Tures*.—These are excellent. At the very outside, where the first loop of wire had slipped a little, there was some loss; but that soon came to an end, and the body of the mass is fragrant and succulent, each stalk retaining its proper shape, and almost its natural green colour.

(2) *Grass*.—This is quite good and well preserved, but has turned more of a brown colour than the tares, and is much drier.

(3) *Winter Rye*.—Well preserved also, but disappointing. The whole mass, which, when built on the stack, and well tramped, stood more than 10 feet high, has squeezed into little more than 1 foot, and also wants the succulence of the tares.

Later Report.

The tares were eaten greedily from the first—the others after a little hesitation; but all the stock, from milch cows to last year's calves, after a few days' practice, are readily eating the mixture of the whole, which is shaken up together before being distributed.

I have tried making ensilage in a house with planks and weights for pressure, and also in stack.

I have no hesitation in giving preference to the latter, both for ease of manipulation and quality of the stuff produced. Many modes of applying pressure may be equally effective, but "Johnson's" has the advantage of not requiring anything heavy to be raised to the top of the stack. One man on the top to adjust the wires is all that is required; and when the stack is fairly set, one man can apply the increased pressure as required, without any assistance.

DUMFRIESSHIRE.

13. MARDEN CARTHEW YORSTOUN of East Tinwald, Irvine House, Canonbie.

1. In season 1883 I used a simple pit silo. In a good gravelly soil a pit 16 feet by 8 feet by 6 feet was dug out, and the stuff thrown up 2 feet high on the sides, making the total depth 8 feet. The sides were lined with boards, posts were erected at the corners, and a light galvanised iron put over the whole. Meadow grass was pitted in July and August. The silage taken out in December was of fair quality, perhaps rather too dry, owing to the grass having been rather too ripe, and also to excessive weighting—bricks to the extent of about 400 lbs. per square foot having been put on the top of boards covering the grass. The pit was not used another year, but a regularly-built silo of masonry was used instead. There was considerable waste at the sides.

2. A stack silo has been put up this season (1886) at Ferney-clench, East Tinwald. Johnson's patent pressure, as sold by the Aylesbury Dairy Company, was used. It consists of a flexible wire rope, laced over the top about 1 foot apart all over, and the rope tightened down by a lever. The whole apparatus is simple and strong, and easily worked. A stack about 16 feet by 16 feet was built in August; meadow grass, and afterwards green oats and tares—73 loads in all; an interval of about a week between the first and second building.

Last week, when cut into, the stack had become rounded on the top, and had sunk to about 8 feet. If it had been built at one time, the height would have been about 20 feet at first. When cut into, about 1 foot from the end and about 4 feet over the top were bad and rotten; the remainder excellent, improving to first class the deeper the stack was cut into.

The expense of apparatus to press a stack of 100 tons is £15. A *properly-built* silo to hold the same quantity would cost about £100.

For hill farms, where there is abundance of grass, and some considerable proportion of loss can be borne, stacks seem to promise great usefulness. But for arable farms, where costly *sown* forage is used—*e.g.*, tares, clover, green corn, &c.—I believe that a *good silo* is the best in the long run.

3. I have no experience of the relative merits of sweet and sour silage. I pay no attention to temperature. I fill the silos gradually, trample down well, press about 100 lb. per square foot, and am indifferent whether the result be sweet or sour. According to the state of the ensiled stuff, whether very green or over ripe, and whether it is ensiled in dry or wet weather,

the silage is more or less sour. For the last three seasons my silage has never been very sour or bad-smelling.

4. I am of impression that for poor arable land, where turnips cannot be grown with certainty or success, a greater weight and quantity of winter food can be got by sowing at least one-half of the fallow break with a forage crop—tares and oats, &c. Last autumn forty-nine very heavy loads of this crop were cut off 3 acres of land, *i.e.*, about 16 tons per acre. The turnip crop alongside in the same field, receiving a heavy dressing of artificial manure and 10 yards of dung manure (the tares and corn had only 10 yards of dung), did not furnish more than two-thirds that weight of turnips. Where it is not desirable to do entirely without turnips, I believe it will answer well to crop the fallow break with turnips on one half and forage crop for silo on the other half, changing the respective halves for each kind of crop each rotation. Thus turnips will be taken only once in ten years on five-course land, instead of every five years, and it is very probable that “finger-and-toe” will not be so much complained of in consequence.

EDINBURGH.

14. Sir JAMES H. GIBSON-CRAIG of Riccarton, Bart., Currie.

In 1884 I made sour silage, in 1885 and 1886 sweet, but never both in one year, so I have had no opportunity of comparing them: but I certainly prefer the sweet. The beasts seem to take to it more readily, and I think the exposed part when cut does not mould so readily when exposed to the air, as the sour did, but these results may in some measure be due to increased experience in filling the silo. Ryegrass and clover aftermath is the favourite with all beasts.

FIFESHIRE.

15. Dr FOWLES of Cairnie Lodge, Cupar.

1. As to the making of ensilage, four years' practice on various processes have decided me that the best way—and fortunately the simplest—is to tumble in the stuff day after day till the silo is full, or a foot more, only taking care that during the process of filling not more than four days should elapse without some addition. Tramp, beetle, or both, all the time round the edges, leaving the centre somewhat hollow, then weight the top with boards and iron, or stone, or bags of sand, or anything, about 70 or 80 lbs. to the square foot, till it has sunk sufficiently to fill again. Repeat this process, and finally seal up with boards laid across (to facilitate the cutting out), and about a foot of

earth. With plenty of earth the weights, iron or stone, need not be buried, but reserved for a second silo of aftermath or otherwise. By this mode I find there is not a particle of waste, and the resulting ensilage is fruity, juicy, and delicious. The practical use and economy may be summed up in the fact that I am able to keep about one-third more stock and make about one-third more dung than I used to do.

3. I made sweet ensilage in 1884, and had great loss from mould; besides, on what was good, I do not think the stock thrive so well as on that made as described in heading 1. In fact, by adopting the process of steady filling and moderate pressure—not more than 70 or 80 lbs. to the square foot—it practically comes out sweet ensilage without the risk of mould. My ensilage this year is nearer the smell of pine-apple than anything else I can liken it to, and the stock eat, and that greedily, every straw.

4. I think, but am not prepared to offer any dictum, that a mixture of turnips and ensilage is most economical. Having been caught by the frost this winter, I have been for six weeks feeding on two-thirds ensilage to one-third turnips (yellow), and I do not think I ever saw my stock improve so rapidly.

P.S.—I may mention that the ensilage I am at present using is made from rye, reaped in June before yellow turnips (a catch crop), and that the turnips are an excellent crop.

16. W. LIVINGSTON & SONS, Walkerton Works, Leslie.

1. We have made ensilage now for four years in silos, partly above partly below ground, stone and cement walls and weights, with concrete blocks on top. The grasses were cut when we had time, irrespective of weather, and stored in small quantities (a load or two) at a time, wet or dry as the case might be, the silo always being closed and weighted again as soon as the grass was put in. Weight used, 150 lbs. to the square foot of surface.

The ensilage was all used with dairy cows, and gave very satisfactory results. It increases the quantity of milk, and with less cakes or grain than used when feeding with turnip and straw. We consider it enriches the milk, and avoids those unpleasant tastes so often noticeable in milk from turnip-fed cows. The economy in our case was great, as the grasses used had to be cut at times and in circumstances that would have prevented us making use of it in any other way. The process has been an entire success. Out of grass we should otherwise have lost we have now a good winter food with very little expense or waste.

3. In using crop 1884 ensilage, we noticed sweet and sour in

the same silo, but could not give a reason for it, only that what we saw of the sweet was made from grass cut and put in dry, although we had lots of grass cut and put in dry that turned out sour ensilage with the same silo treatment. The cows ate the one as frank as the other, and we noticed no difference in condition or milk.

4. This year, previous to opening our silo, we were feeding with turnips and straw, cabbage, and grain, and we had complaints of the turnip taste in the milk, but as soon as we gave the cows a feed of ensilage (28 lbs. per day) along with the turnips, we found a great improvement in the taste of the milk. We don't approve of feeding exclusively on ensilage. We always consider we get a better result from a mixed diet. The following gives good results both as to butter and milk:—Morning, 40 lbs. raw turnips. Two hours later, 28 lbs. ensilage. Midday, 5 lbs. of crushed grain and bran. Three hours later, 28 lbs. ensilage. Supper with boiled meat in the proportion of 2 lbs. of barley and linseed, with turnips and water to make up quantity required, say 60 lbs. per cow. Give straw and water; what they will take. They will not take more than 6 to 8 lbs. of straw and very little water with the above diet.

LANARKSHIRE.

17. JOHN SPEIR, Newton Farm, Newton, Glasgow.

My first silo was only opened a few days before the New Year, and having been hurriedly filled up at the last, we are not yet down to where it was most heated. Last season I carried a tube from top to bottom, generally keeping the lower end of it about 4 feet from the surface, where it usually registered from 120° Fahr. to 150° Fahr.—from 130° Fahr. to 135° Fahr. being about the average. As far as we have gone as yet it is much similar to last two years, and although put in without scarcely any tramping (*only a very little round the side*), there has not yet been a vestige of loss. The crop used was second cut ryegrass, few seed stalks, and nearly all blades. Filling took five weeks fully, and was carried on more or less every day. After the first week it consolidated about as quick as it was put in, and of course increased in height very slowly. My milk cows are doing well, although much hampered by cold weather.

PEEBLESSHIRE.

18. COLIN J. MACKENZIE of Portmore, Eddleston.

I regret that I cannot afford the committee any valuable information from personal experience on any of the subjects upon

which it is specially desired. I have not made silage in simple pits. I have not yet made a stack, and although I have made during the last season nearly 9000 cubic feet of sweet silage, I have not been able to make any comparative test of its merits as compared with sour silage. But it may be possibly of interest to some to have a record of the filling of a silo to produce sweet silage. I have as yet opened only one of the silos which contains sweet silage: it is one of the pair at Earlypier, and the other was filled for sour silage from the same fields, and during the same period. The material was grass from hained lea, and during the process of filling the temperature, at a depth of about 8 feet, was ascertained by means of a tube and thermometer; the temperature, about 6 or 8 inches from the surface, was also taken after the fermentation had penetrated each successive layer. The following table will show the matter clearly:—

EARLYPIER.

<i>Sweet Silage.</i>				<i>Sour Silage.</i>	
Date.	No of Cart-loads.	Temperature		Date	No of Cart-loads.
		Eight Feet Down.	Near Surface.		
August 14.	7	...	...
" 16.	8	120°	138°		
" 18.	7	122	141	August 20.	34
" 23.	2	122	140	" 21.	29
" 26.	4	120	140	" 23.	26
" 30.	8	118	139		
Sept. 1.	8	115	139		
" 2.	4	...	...	Sept. 2.	8
" 3.	8	118	133	" 3.	22
" 4.	7	119	139	" 4.	8
" 9.	14	119	139		
" 13.	12	118	138	" 10.	29
" 15.	12	120	140		
" 18.	14	117	135		
" 19.	3	118	136		
" 20.	14	119	137	20.	14
October 9.	12				
" 11.	9				
" 18.	11				
164				170	

The sweet silage was not weighted until September 20: it was uncovered on October 9, and finally closed on October 18. The sour silage was pressed on August 23, opened for filling September 2, and pressed again on September 4. Opened for second filling September 10, and finally closed September 20. Dr Aitken visited the silos on January 22, and took samples from both, and the analyses which he has made exhibit some

interesting features, to which he will refer in his own report. The only practical remarks I have to make are that the cattle prefer the sour to the sweet silage; that no harm appears to occur if a silo be left without addition being made to its contents for many days; and that, in spite of the great heat produced in the manufacture of sweet silage, there does not appear to be any greater loss of moisture than in sour silage. The steam was always found condensed on the upper layer of grass. The waste on the top of the silos was about equal, and did not exceed 3 inches.

ANALYSES OF SAMPLES OF ENSILAGE taken from the Silos
at Portmore, 22nd January 1887.

	EARLYPIER.						BORE- LAND.	HARCUS.
	SWEET SILAGE.			SOUR SILAGE.				
	Top.	Middle.	Bottom	Top.	Middle.	Bottom		
							Spreddy.	Sour.
Water,	65.82	76.25	78.38	64.76	76.08	76.71	79.87	77.24
Solids,	34.18	23.75	21.62	35.24	23.92	23.29	20.13	22.76
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Solids (dried at 212° F.)—								
Albumen,	5.54	7.53	10.63	5.98	6.33	7.09	9.50	8.42
Non-albuminoid nitro- genous matter reck- oned as albumen, . .	5.09	1.44	2.94	3.77	3.64	3.32	2.46	1.64
Carbohydrates, &c., .	52.27	50.83	46.28	52.40	46.19	46.14	46.89	46.29
Ether extract, . . .	4.90	5.10	5.65	5.70	5.95	6.45	5.73	6.60
Woody fibre,	24.85	26.10	24.20	25.15	25.15	27.35	25.65	24.85
Ash,	7.35	8.95	10.30	7.00	12.75	9.63	9.55	12.10
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Containing sugar, . .	3.08	.26	.40	1.73	.98	.47	.47	.50
Acidity reckoned as acetic acid, . . . .	.48	.30	.45	.33	.42	.42	.30	.42

Since writing the above, the silo at HARCUS containing sweet silage has been opened, and the contents found to be in excellent condition. It has no trace of sourness, but has the aroma of well-made hay, with the addition of a sweet smell, at some parts resembling that of molasses. It appears to me to be a good sample of sweet silage. Samples of the contents of these silos were also taken by Dr Aitken, and I give his results along with those of the Earlypier silos. I also append the dates of filling and the temperatures attained at HARCUS.

HARCUS.

*Sweet Silage.**Sour Silage.*

Date.	No. of Cart-loads.	Temperature,		Date.	No of Cart-loads.
		Eight Feet down.	Near Surface.		
August 7.	7	...	...	August 16.	28
" 11.	8	95°	115°	" 17.	22
" 14.	9	120	140	" 18.	8
" 17.	10	120	138		
" 20.	8	120	138	" 31.	21
" 24.	2	115	137	Sept. 1.	25
" 28.	8	120	140	" 2.	5
" 30.	7	112	133	" 6.	27
Sept. 2.	4	115	139		
" 3.	4	115	139	" 16.	22
" 4.	8	117	139	" 17.	6
" 6.	11	117	139		
" 10.	6	...	...
" 11.	5	...	...
" 13.	8	...	...
" 16.	10	...	...
" 17.	11	...	...
" 18.	10	...	...
" 21.	8	...	...
October —	8	...	...
" 11.	3	...	...
" 15.	2	...	...
" 16.	3	...	...
160				174	

ANALYSES OF SAMPLES OF SILAGE taken from the Silos .
at Portmore, March 1887.

	EARLYPIER.		HARCUS.	
	Sweet.	Sour.	Sweet.	Sour.
Water,	75.09	76.08	69.39	77.77
Solids,	24.91	23.92	30.61	22.23
Solids (dried at 212° F.)—	100.00	100.00	100.00	100.00
Albumen,	6.52	6.33	6.71	6.33
Non-albuminoid nitro- genous matter reckoned as albumen,	4.48	3.64	2.02	2.28
Carbohydrates,	44.55	46.18	46.05	47.87
Ether extract,	6.20	5.95	6.85	6.35
Woody fibre,	28.85	25.15	30.20	28.70
Ash,	9.45	12.75	8.17	8.47
	100.00	100.00	100.00	100.00

RENFREWSHIRE.

19. COLIN METHVEN, Muirshiel, Lochwinnoch.

In pit. Meadow grass, as it is cut, not chaffed; put 2 feet of grass into pit every third day. Trod it down. No weight put on until three parts full. Commenced to fill pit middle of September, and finished filling pit middle of October. Altogether about 25 tons, covered with planks on top of grass, and weighted with casks filled with refuse barytes, putting on 1 cwt. to the square foot. Pit opened last week of December 1886. Silage sour. In good condition. Cattle eat it greedily. Increases the quantity of milk, and improves the health of cattle at this season. As a succulent food in Highland districts, where there is not much turnips, ensilage is invaluable. In late wet seasons such as the last, hay could not be saved after the first of September. Therefore, I consider silage a benefit to the health of stock, and a saving of feeding that was formerly lost.

ROXBURGHSHIRE.

20. J. W. THOMSON, Towford, Oxnam, Jedburgh.

1. My silo is 8 feet 6 inches deep, cut through gravel until the sand was reached. Lined with rough sarking for about 3 feet from top; no lining at bottom. The year before last it was filled with rough grass off the roadside in very rainy weather. After it had sunk for about 6 feet it was refilled, and allowed to sink until it had settled about 4 feet from the top. Filled again, and piled up to about 4 feet above top, and planks put on, and weighted with nearly 2 tons of sand—which had come out of the silo in the making. This was in July. It was opened in November, and all who saw it, judging from its appearance and smell, said it was a failure. To their surprise, when laid before it, a cow ate it greedily. A pony was afterwards tried with it, and after smelling and snuffing at it for a few minutes ate it too. The cow afterwards preferred it to good meadow hay. This was sour ensilage. The flow of milk from the cow was decidedly increased, and the cream thicker. Another advantage is, there is no smell in the butter, as with turnip feeding. Regarding the economy of the process there can be no doubt. One ton of green grass put into a silo comes out nearly the same weight, whilst a ton of grass made into hay only a fractional part is available. For feeding purposes ensilage has the advantage.

The next year being dry weather at the time of making, my ensilage was sweet. The process of making was the same. The result was that every animal ate it at first sight. Work

horses and pampered carriage horses, as well as hunters, ate it at once and looked for more.

There is no doubt at all of its success ; and I am certain that when once tried, it will be continued. Those who are afraid to risk their winter keep in ensilage should try it on a small scale at first, and I have no fear but they will extend their operations.

There is less work than in making hay, and a simple plan can very easily be found for pursuing it. Stack ensilage is made the same way, and if care is taken to trample the sides well when building, and the weights properly put on, the profit will out-balance the small waste at the edges.

Ferns, reedy grass, and rushes can all be pressed into a silo, and the animals will eat it.

THE CEREAL AND OTHER CROPS OF SCOTLAND FOR 1886, AND METEOROLOGY OF THE YEAR RELATIVE THERETO.

THE CROPS.

THE following comparison of the cereal and other crops of 1886 with the previous year, has been prepared by the Secretary of the Society from answers to queries sent to eminent agriculturists in different parts of the country.

The meteorology of the year has been furnished by Mr Alexander Buchan, Secretary of the Meteorological Society of Scotland.

The queries issued by the Secretary were in the following terms :—

1. What was the quantity, per imperial acre, and quality of grain and straw, as compared with last year, of the following crops? The quantity of each crop to be stated in bushels. What quantity of seed is generally sown per acre?—(1) Wheat, (2) Barley, (3) Oats.
2. Did the harvest begin at the usual time, or did it begin before or after the usual time? and if so, how long?
3. What was the quantity, per imperial acre, and quality of the hay crop, as compared with last year, both as regards ryegrass and clover respectively? The quantity to be stated in tons and cwts.
4. Was the meadow hay crop more or less productive than last year.
5. What was the yield of the potato crop, per imperial acre, as compared with last year? The quantity to be stated

- in tons and cwts. Was there any disease, and if so, to what extent, and when did it commence? Were any new varieties planted, and with what result?
6. What was the weight of the turnip crop, per imperial acre, and the quality as compared with last year? The weight of the turnip crop to be stated in tons and cwts. How did the crop braird? Was more than one sowing required? and why?
 7. Were the crops injured by insects? State the kinds of insects. Was the damage greater or less than usual?
 8. Were the crops injured by weeds? State the kinds of weeds. Was the damage greater or less than usual?
 9. Were the pastures during the season of average growth and quality with last year?
 10. How did stock thrive on them?
 11. Have cattle and sheep been free from disease?
 12. What was the quality of the clip of wool, and was it over or under the average?

From the answers received, the following statistics have been compiled:—

EDINBURGHSIRE.—Wheat, fully average crop, 44 bushels; straw about the same as last year; seed sown, 3 bushels. Barley, fair crop of 42 bushels; early harvested; quality good, realising 5s. per qr. more than last year; seed sown, 2½ bushels. Oats, good crop, above average; 6½ bushels; selling about 5s. per qr. less than last year; seed sown, 4 bushels. Commenced harvest, Sept. 6, or a week later than the preceding year. Hay, scarcely an average crop; about 2 tons, or 10 cwt. less than last year. No meadow hay. Regent potatoes, about 5 tons 10 cwt., Magnum Bonum and Champions, 6 tons and 10 cwt.; no disease; new varieties—planted a ton of Sutton's Early Regent, very small crop, also planted some "Imperata," a large cropper and an early potato. Turnips, a heavy crop; from 5 to 10 tons more than last year. A few acres sown a second time destroyed by "Turnip Fly." No injury by weeds. Pasture better feeding quality than last year. Stock, both cattle and sheep thrive well, considerably better than last year and were quite free from disease. Wool about the average of former years.

LINLITHGOWSHIRE.—Wheat, about the same in quantity but inferior in quality, of both grain and straw, as compared with last year; from 30 to 40 bushels; seed, 2½ to 3 bushels. Barley, about the same in quantity but much inferior in quality, of both grain and straw; from 30 to 40 bushels; seed from 2½ to 3 bushels. Oats, about the same in quantity but the worst in quality, of both grain and straw, for the last 30 years or more; from 24 to 36 bushels; seed, 4 to 6 bushels. Harvest began from a week to a fortnight later, and did not end for a month, and in many cases, six weeks later, as compared with last year. Hay, about the same in quantity and quality as compared with last year; from 1½ to 2 tons. No meadow hay in this district. Potato crop about the same as last year; very little

disease. Turnips, better than last year; braided well; almost no second sowing required; from 15 to 30 tons. No damage by insects. Crops not injured by weeds. Pastures, about the same average growth and quality with last year. Stock did not thrive well. Cattle and sheep free from disease. An average clip of wool.

HADDINGTONSHIRE (Upper District).—Wheat, none grown. Barley, 32 bushels, weighing 55 or 56 lbs.; more than half of crop damaged by weather after being cut; straw, average quantity; seed, $3\frac{1}{2}$ bushels. Oats, 29 to 40 bushels from 42 to 44 lbs.; straw, short crop and damaged by weather; seed, 5 bushels. Harvest commenced 13th September, 10 days later than last year, and the crop was not all secured till 3rd November 1886. Hay, an average crop and well secured. Meadow hay, a good crop, but not very well secured. Potatoes, 5 to 6 tons; no disease and of good quality; no new varieties. Turnips, a good crop, from 18 to 24 tons; braided well and no re-sowing necessary. No damage by insects. Thistles and wild mustard prevalent in some fields. In spring, pastures very bare but improved during summer. Stock have done well and were free from disease. On hill flocks, wool considerably under average; on feeding sheep a fair crop and of good quality.

HADDINGTONSHIRE (Lower District).—Wheat, 48 bushels; good quality; straw equal to last year; 3 bushels of seed sown. Barley, 48 bushels; quality up to an average; straw about the same as last year; $2\frac{1}{2}$ bushels seed sown. Oats, 50 bushels; quality good; straw an average; 4 bushels of seed sown. Harvest began 17th August, three days later than last year. Hay, from 2 to $2\frac{1}{2}$ tons; quality fine; a fair mixture of ryegrass and clover. No meadow hay. Potatoes, 7 tons; rather short of last year's yield; quite free from disease. Turnip crop, 24 tons; good all over the district; braided well. No injury sustained by insects. Pastures very poor at the beginning, but improved after 1st August. Stock throve pretty well, and were free from disease. An average clip and of good quality.

BERWICKSHIRE.—Wheat, 29 bushels; 250 stones straw; 3 bushels seed; quality of grain under average; straw, average quality. Barley, 33 bushels; 140 stones straw; $2\frac{1}{2}$ bushels seed; grain discoloured; straw of inferior quality. Oats, 40 bushels; 170 stones straw; $4\frac{1}{2}$ bushels seed; quality of grain and straw good, when saved before rain, very bad after exposure to wet weather. Harvest began about a fortnight later. Hay crop, 220 stones of 14 lbs.; quality good. Meadow hay very little grown. Potato crop, 5 tons; no disease. Turnip crop, 17 tons; good quality; only one sowing required. No injury by insects nor by weeds. Pastures of average growth and quality. Stock throve on them and were free from disease. Clip of wool, 15 per cent. deficient in Merse, 20 per cent. deficient in Lammermuir.

ROXBURGHSHIRE.—Wheat, very little grown in this county; above an average, but much deteriorated with the weather both in straw and grain; about 26 bushels. Barley, average crop as to grain but rather under as to straw; quality good had it not been damaged, but not more than $\frac{1}{2}$ secured before the weather broke; best qualities are bringing about double the price that the damaged class yield; about 34 bushels. Oats, considerably under an average, and very much deteriorated in quality, both straw and grain, the little that was secured before the rain is remarkably fine quality; about 30 bushels. Harvest began about a fortnight later than usual. Hay, quality good; quantity about $1\frac{1}{2}$ ton. Meadow hay, generally well got, but not quite so large a crop as last year. Potato crop, although very little disease, they lifted under an average crop but good quality; about 4 tons

marketable potatoes; no new varieties; few grown in Roxburghshire. Turnips, a good equal crop but under average weight; the early sown braided and came away very well, but later sown was kept late with the dry weather; about 16½ tons. Little or no damage done to the crops by insects. A few fields injured by wild mustard but nothing otherwise. Pastures, scarcely average growth but quality good, being well planted with clover. Sheep did remarkably well but cattle scarcely so well, the bite being rather short for them. Sheep have been very healthy but a few cases of pleuro among cattle. Clip of wool, about ½ under average as to weight but fine quality.

SELKIRKSHIRE.—Wheat, none grown. Barley, 24 to 26 bushels; good quality, but much damaged by weather; straw about an average; 3 to 4 bushels sown. Oats, 26 bushels; good quality grown, but also much damaged by weather, in fact, so much so, that unless kiln-dried it cannot be used for stock-feeding; straw rather under average and almost destroyed by weather; 4 to 5 bushels sown. Harvest began early in September—two weeks after the usual time—and, owing to the very unsettled state of the weather, it was prolonged almost into winter. The crop of ryegrass-hay would almost average 1½ to 2 tons and in many cases well mixed with clover. Meadow hay, under an average in quantity, and difficult to secure, owing to lateness in the season before it could be cut. Potato crop, 4 to 5 tons, and much better quality than last year; very little disease and almost no new varieties. Turnip crop, 18 to 20 tons, and generally a fine crop; the crop mostly braided well; and no re-sowing. No damage done by insects. No weeds beyond average. Pastures were extremely bare till autumn, and although there was strong growth then, still there was not much feeding in it. Stock did not thrive extra, owing to want of pasture. There have been one or two isolated cases of cattle-disease but none of sheep. The clip of 1886 was much under average, especially in quantity, owing to the severity of the previous winter.

PÆBLESSHIRE.—No wheat grown. Barley, a fairly good crop; yielding from 30 to 36 bushels; better than last year, but owing to the wet weather during harvest very much damaged; 3 to 4 bushels generally sown. Oats, generally a good crop over all the county; about 36 bushels; straw, a fair average; altogether a much heavier crop than last year, and, had it not been for the disastrous weather, much of it standing for weeks in the stook, it would have been a fairly remunerative crop; about 4 bushels sown. Harvest began rather after the average time. The hay crop rather better than last year; well mixed with clover; from 1½ to 2 tons per acre; in most cases secured in fairly good order. Meadow hay a heavier crop than last year, but owing to the weather it was difficult to secure in good condition; in the higher districts, in many cases, it was entirely destroyed. Potatoes were a better crop than last year; say 4 tons; there was little or no disease. The turnip crop was one of the best grown in this county of some years; from 15 to 25 tons; the crop, in most cases, braided well and did not require re-sowing. Little damage done to crops by insects or weeds. The pastures were quite of average growth, both as to quality and quantity, and much better than in the preceding year. Stock thrived well. There was no disease. The quality of wool was fairly good and the price slightly better than last year, but owing to the light clip, caused by the severe weather in spring, the quantity was fully ½ below an average, and the rise in price did not nearly counterbalance the decrease in quantity.

DUMFRIESSHIRE (Upper Nithsdale).—Wheat, none grown. Barley, very little grown. Oats, a light crop generally; 30 bushels; 5½ bushels sown. Harvest began two weeks later than usual; a very protracted harvest; a deal

of stuff but well got. Hay, not quite an average crop, say from 24 to 26 cwt. Meadow hay, less productive than usual. Potato crop, less than last year; about $3\frac{1}{2}$ tons; not much disease. Turnips, a good crop, say from 18 to 20 tons. Not more injury than usual by insects. The usual injury from weeds. Pastures, average growth with a cold summer. Stock thrived fairly well, considering a bad summer, and were free from disease generally. Wool, a light clip, under the average and not quite usual in quality.

STEWARTRY OF KIRKCOUBRIGHT.—Wheat, 29 bushels, 30 last year; harvest later and quality not so good as last year; seed, $2\frac{1}{2}$ to 3 bushels. Barley, 31 bushels, 30 last year; harvest later, quality hardly so good. Oats, $33\frac{1}{2}$ bushels, $32\frac{1}{2}$ last year; quality of early harvested portion better than last year, say $\frac{2}{3}$ of crop; $\frac{1}{3}$ harvested late, very inferior. Harvest began about 10 days later than usual. Hay crop, quality good, equal to last year; quantity about 22 cwt., last year, 28 cwt., average of 28 parishes. Meadow hay, quantity 23 cwt., last year 29 cwt., average of 28 parishes. Potato crop, about 6 tons this year, about $6\frac{1}{2}$ tons last year; there was considerable disease in early varieties and in champions. Turnip crop, $18\frac{1}{2}$ tons this year, $16\frac{1}{2}$ last year; crop braided well; no re-sowing required; owing to excess of rain and lack of sunshine in October and November, they grew too much shaw, and roots are coarser than usual, but generally sound. No injury from insects or weeds. Pastures of average growth and quality. Stock thrived very well. Three or four outbreaks of pleuro in the county; affected animals killed; others in contact inoculated, inoculation protective in every case; county now clear. Clip of wool, quality equal to last year; quantity in some cases under average.

WIGTOWNSHIRE.—Wheat, quantity of produce, 30 bushels; quality inferior; quantity sown, 3 bushels. Barley, quantity of produce, 32 bushels; quality, very poor; quantity sown, $3\frac{1}{2}$ bushels. Oats, quantity of produce, 32 bushels; quality, poor—great deficiency of weight; quantity sown, $4\frac{1}{2}$ bushels. Harvest very late, 14 days behind the usual time. Hay, somewhat less bulky, both as regards ryegrass and clover; quantity, 1 ton. Meadow hay, an average growth. Potatoes, considerably less—about $\frac{1}{2}$ less; quantity, 6 tons; more disease than last year; commenced early in August; no new varieties planted. Turnips, weight 14 tons; quality, a fair average; crop braided well; but result of crop not so good as anticipated early in the season. No injury by insects or weeds. Pastures of average growth, but quality barely so good, owing to excess of moisture. Stock thrived fairly well and were free from disease. Clip of wool, quality good, but clip considerably under the average.

AYRSHIRE.—The wheat crop was unusually good for a late season; near the sea-coast the straw was fine, and the yield of grain was large in proportion to the bulk of crop; on strong inland soils heavy crops were grown; the crop may average from 32 to 36 bushels; it is rather better than the crop of 1885; weight of straw, $1\frac{1}{2}$ to 2 tons; 3 bushels seed used in broadcast sowing; small extent grown. Barley, better than crop of 1885; average about 38 to 40 bushels; weight of straw, $1\frac{1}{2}$ tons. Oats, generally a good crop, with the exception of the latest districts; in early localities the oats were secured in good condition, and the yield may be 45 to 50 bushels; on inland farms a considerable part was damaged by long-continued exposure; on deep lands where long oats are sown, the yield may be 48 to 56 bushels. Harvest about ten days later than usual. Hay, about $1\frac{1}{2}$ tons; the backward spring made a thin crop with deficient clover. The meadows yielded about an average bulk, and the hay was gathered in good condition. The early potato crop was good; the crop was not so soon

ready for the market as in ordinary seasons; the yield was satisfactory in the latter half of July; the autumn crop might range from 6 to 8 tons; in the inland districts disease was seen about the middle of September, and about one-third of Regents was lost. Turnips were an exceptionally good crop, a great extent might be put at 20 and 25 tons per acre; not much re-sowing. Injury by insects nothing unusual. Injury by weeds nothing to note. Pastures deficient until midsummer but good afterwards; fine growth in autumn. Stock did generally well; in the first half of the season the yield in the dairies was deficient, and the drawback was not fully made up in autumn. Sheep sound, and greatly improved towards the end of the season; little disease amongst cattle. Clip of wool under the average.

BUTE.—Wheat, only sown on the farm of Kerrylamont; 10 acres; a very heavy crop—48 bushels; quality of straw and grain was good; seed, 4 bushels. Barley, a light crop—about 30 bushels; quality of grain and straw inferior; seed, 4 bushels; barley has been doing bad in Bute for several seasons, owing principally to the backward seasons and to the fact that barley seems to have been sown too often on the same ground. Oats, a good crop—36 to 38 bushels; quality of grain and straw good, mostly got in before the weather broke; seed, 5 to 6 bushels. Harvest began about 10 days later than usual. Ryegrass under average, about 1½ tons; clover not so good; timothy hay, a heavy crop, above 2 tons. The dry cold weather in the beginning of the season seems to have hurt the hay crop. Scarcely any meadow hay grown, light crop. Potatoes, under average, from 5 to 7 tons; disease prevalent in early varieties, not quite so bad in late varieties, commenced about the beginning of August; quality inferior; no new varieties. Turnips, good crop and above average, from 15 to 28 tons; braided well; no re-sowing except where bad managed. Price very low, from 9s. to 12s. per ton. No injury to crops by insects. Crops not much injured by weeds; wild mustard a little troublesome to keep down. Pastures good after June. Stock thrive well. Cattle, free from disease; sheep, braxy never as bad in Bute, in some places 6 to 8 deaths out of the score; the cause of the braxy attributed to the lean condition of the ewes at lambing time, and lambs, therefore, badly milked. Clip of wool, inferior, under average considerably.

ARRAN.—No wheat or barley. Oats, quantity about 26 bushels; straw about average in quantity; quality not so good on account of bad harvest; and oats a good deal lighter than former years; about 6 bushels of seed. Harvest about two weeks later. Hay crop better, would average about 1 ton 12 cwt. No meadow hay. Potato crop, about 5 tons 10 cwt.; more disease; one-fifth of the crop began near end of August; no new varieties. Turnip crop, extra good, both in quantity and quality; about 24 tons; braided well; no re-sowing. No injury from insects or weeds. Pastures of average growth and quality. Stock thrive well and were free from disease. Clip of wool under average; quality scarcely so good.

LANARKSHIRE (Upper Ward).—Wheat, none grown. Barley, almost none grown. Oats, 32 bushels on average; quality, fairly good where got in good order, but in this district nearly the half of the crop spoiled with long exposure, some of it standing five weeks in stook, still as good as last year not being spoiled with frost before ripe; seed, 5 bushels. Harvest about 12 days after the usual time. Hay, 1 ton 10 cwt.; quality good, better than last year. Meadow hay, fully as good. Potatoes, 5 tons; 1½ tons less than last year; no disease; in some low places, frosted before ripe; no new varieties of any consequence; Regents and Red Bogs most in favour, fewer Champions planted, selling as low as £10. Turnips, from 20 to 30

tons grown in this district; much the same as last year; braided well; no second sowing needed. Damage by insects, less than usual. Wild mustard or runches very bad, more loss by them than usual; no turnip fly to eat up the young braird. Pastures scarcely so good as last year; much affected by drought in May, June, and July. Stock thrived fairly well and were free from disease. Clip of wool, under average on hill farms the sheep being in poor condition, owing to the protracted storm in winter and spring.

LANARKSHIRE (Middle Ward).—Wheat, quantity 36 bushels; quality better than last year; seed sown about 3 bushels. Barley, quantity 32 bushels. Oats, quantity 38 bushels. Harvest about two weeks later than usual. Hay crop, about 1 ton 15 cwt; good quality on the whole. Meadow hay more productive than last year. Potato crop, about 10 tons; rather better than last year; scarcely any disease. Turnip crop about 25 tons; much the same as last year; crops long of brairding; but only one sowing required. Crops not much damaged by insects. Pastures better than last year, but somewhat later. Stock thrived very well and were free from disease.

LANARKSHIRE (Lower Ward).—Wheat was generally a good crop this season, but greatly damaged by the bad harvest; the yield would be from 30 to 36 bushels; seed, 3 bushels; straw, 150 stone. Barley, almost none grown in this district, but, where grown, the yield would be about 30 bushels; seed 4 bushels. Oats, generally a good crop, but much injured by the bad harvest, in many cases badly sprouted before being secured; black low lying land was hurt with frost and badly laid with stormy weather, it did not yield so well; the yield on good ground would be from 30 to 36 bushels. Harvest was about three weeks later than last year and the worst we have had for many years. Hay was a good crop, much the same as last season, on good ground; some low lying fields much hurt by frost during the winter; got well secured; yield about 1 ton 15 cwt. Meadow hay much the same as last year; an abundant crop on some meadows when well watered. Potatoes generally a good crop, but more disease in the earlier sorts; disease not much noticed till lifting time; yield from 6 to 7 tons of good potatoes; Regents and Champions were hurt by frost before being full grown, consequently small in size. Turnips, an abundant crop; braided and came away well, but latterly got too much rain on stiff land and did not fill so well; yield from 16 to 20 tons; where stored in time have kept well generally. The crops were not much hurt by insects, except grub-worm in some fields of oats and also patches of hay on low lying ground. Weeds were much the same as last season; no crop hurt to any extent. Pasture grass deficient at the beginning but improved and continued good till late in the season. Stock generally did well as the season advanced. Some cases of Pleuro-pneumonia in cattle, but sheep free. Wool about an average, both in quality and clip.

RENFREWSHIRE (Middle Ward).—Wheat, 36 to 38 bushels; the breadth of wheat grown is considerably less than formerly, consequently it is only grown on land suitable for a good yield—when the seed time and during its growth are favourable; while the average is pretty good, I have not heard of any specially large yields such as in some past seasons, I have heard of and known from 50 to 60 bushels; unless in exceptional cases wheat in this district was a good crop; straw from 1½ to 2 tons. The breadth of barley sown is also limited, and, with the exception of a very few plots, is sown more for the benefit of the grass afterwards than for any benefit to be derived from it as an individual crop; from 24 to 40 bushels is, I reckon, something like the yield, of course the lesser quantity is on the

inferior land, while the larger is on soil better adapted for its growth, barley cannot be said to be a Renfrewshire crop, however; straw from 1 to $1\frac{1}{2}$ tons. Oats, were a fairly good crop and would yield something like from 30 to 50 bushels, probably in a few cases even 60 bushels; they were somewhat irregular and cannot be reported much above an average crop; straw fully an average, from $1\frac{1}{2}$ to 2 tons. In a few cases, harvest began about the usual time, but in the majority at least two weeks later and in some cases 3 weeks. Ryegrass and timothy were both good crops, especially the latter; the yield would run from $1\frac{1}{2}$ to $2\frac{1}{2}$ tons; the greater part of it was secured in first-rate condition. In the middle district of Renfrewshire, proper, meadows are not plentiful, still there are a considerable breadth which may be described as such; the crop was bulkier than last season. Among the earlier and finer sorts, the potato crop was superior; as to quantity, from 6 to 9 tons; disease, however, wrought havoc to the extent of from $\frac{1}{4}$ to $\frac{3}{4}$; the later and hardier varieties, especially Champions, were not an average crop, Magnum Bonums, however, were about an average; of these varieties the produce would be from 5 to 8 tons. Turnips are a fairly good average crop; from 15 to 20 tons; as a rule the crop braided well after first sowing. Little damage to the crops from insects; crows did most damage, both to potatoes and, in some cases, to turnips and oats; those who encourage rookeries should pay the damage they incur. Not damaged by weeds. Pastures superior to season 1885. As a rule, stock thrive and paid better for grazing than last season and were remarkably free from disease. Little wool in this district.

RENFREWSHIRE (Upper Ward).—Wheat, none sown. Barley, none sown. Oats were a good crop; plenty of straw; being a late seed-time and frosty nights, was a very late harvest; it rained for three or four weeks in the middle of harvest, and the crops were half lost; 20 to 30 bushels but not saleable. Harvest was begun about the 17th of September. Ryegrass hay was a light crop and almost no clover in it; the cold frosty nights spoiled it; from 20 to 25 cwt. Meadow hay was lighter than last year but well got, also timothy. Potatoes looked well till September, when they were frosted down and spoiled; all Champions grown here; from 5 to 6 tons. Turnips were a good crop; no second sowing required; turnips are all consumed on the farms; and cannot state the weight. No injury to crops from insects. No injury from weeds. Grass was very late, and no grass till the month of June—the end of the year was the best. Cattle did not do well till the end. There has been no disease among cattle but a good deal of abortion amongst cows. No sheep.

RENFREWSHIRE (Lower Ward).—No wheat and no barley grown in the district. Oats a better crop than last year especially in regard to straw, but owing to bad harvest and lateness of the season both grain and straw inferior; the yield may be said to vary from 21 bushels per acre on the high lands to 40 on the lower, an average of the whole district being about 30 bushels; the quantity of seed sown from 4 to 5 bushels. Harvest began later than usual, early oats about 10 days later but generally three weeks, and on late and backward soils even later. It has proved to be one of the most protracted harvests for many years. Ryegrass hay in the lower district was not so abundant a crop as last year, fully 5 cwt. less, but in the upper it was not inferior in bulk to the former crop, as a rule, the crop was fairly well secured and the average of crop would be about one ton. Meadow hay was good quality and the yield equal to the former year. Potatoes a fair crop but yield hardly equal to the former year, $4\frac{1}{2}$ to $6\frac{1}{2}$ tons being about the average; early frost did damage in the high grounds and disease did more harm to the crop than in the former year, early sorts $\frac{3}{4}$ diseased, and Champions and Reading Heroes $\frac{1}{2}$, the latter failing to

maintain the expectation of being a disease resisting variety. The turnip crop was an improvement on last year's, in the more favoured localities the bulk would exceed last year's by 1 ton, and the average may be stated at from 13 to 19 tons; second sowing was not universal, although in the uplands portions of the crop had to be re-sown. The fly did some destruction, but other insects did not. Weeds as usual. Pastures were very late, and did not improve on the former year. Stock were cheaper to put on grass, but graziers do not admit that it was a profitable season. Stock were healthy and no disease. Few sheep in the district.

ARGYLLSHIRE (District of Oban).—Wheat, none sown. Barley, scarcely any sown, practically none. Oats, between 5 and 6 bushels were sown; the crop did not ripen quite so regular, but the yield would be about 6 bushels more than last year, and the quality of the grain much better; the straw was also bulkier; the crop was generally well secured. Harvest about two weeks later than usual, but was good and short. Hay, much lighter; quality of ryegrass and clover good. Meadow hay, much less productive. Potatoes, yield much the same as last year; disease was later of showing, but affected all varieties; Champions more affected at the time of lifting than they have been since their introduction; no new varieties sown. Turnips, about 1 ton more than last year; braided well; no second sowing required. No injury by insects. Not greater injury than usual by weeds. Pastures about the average of last year, but not any better. Stock thrive fairly well; fully later in showing condition, and were free from disease. Clip of wool, an average in quality and quantity.

ARGYLLSHIRE (District of Lochgilphead).—Wheat, none grown in the district. Barley, very few acres grown in the whole district. Oats, owing to the coldness of the season, the crop was late, in fact, at one time it seemed as if it would never ripen, but when it once changed colour, it came on rapidly to maturity; weight of corn per bushel, much the same as last year; yield, slightly better. The harvest was late, fully a fortnight. Hay was rather above the average and was well got. Meadow hay about the same. Potatoes, poor crop, small in size, inferior in quality, and not properly ripened; not much disease. Turnips, cannot say weight; crop fine, much the same as last year; braided well; only one sowing. No injury by insects. Nothing unusual by weeds. Pastures scarcely of average growth and quality; season too cold, frequent frosts, even into month of July. Stock did not thrive so well as usual, but were free from disease. Clip of wool rather under average.

ARGYLLSHIRE (District of Cowal).—Wheat, none grown. Barley, none grown. Oats, 45 to 50 bushels; 2 to 3 tons of straw; usually 6 bushels of seed in this wet climate to the acre. Harvest began about the usual time. Hay crop, $\frac{1}{2}$ less; quality good up to $2\frac{1}{2}$ tons. Meadow hay, less productive. Potatoes, quantity, a fair average; but little disease; quality, a good average. Turnips, excellent both in quantity and quality; no second sowing; up to 26 tons of Swedes, and $22\frac{1}{2}$ Yellows. No special damage by insects. Usual weeds. Pastures, less in quantity; but stock thrive fairly well, and were quite free from disease. Clip of wool, $\frac{1}{4}$ under average.

ARGYLLSHIRE (District of Inveraray).—No wheat or barley. Oats, from 4 to $4\frac{1}{2}$ bolls; 24 to 27 bushels; straw, rather short and not well saved; seed, 6 bushels. Harvest began after the usual time. Ryegrass and meadow hay under usual weight, not more than 2 tons, and not well saved. Meadow hay, less productive. Potatoes, a plentiful crop, principally Champions, but quality rather inferior; very fine; diseased potatoes not more than 1 in 20; the Duke of Argyll planted very many varieties, but in most cases the

result was disappointing. Turnips came slowly away at first, owing to cold weather, but finally turned out a good and heavy crop, probably an average of 18 tons; very little second sowing required. Very little damage done by insects. Weeds to about the usual extent, dockens, thistles, mustard, and flowering nettle; not more than usual. Pastures scarcely of average growth and quality with last year; stock thrived moderately well—not so well as usual, and were free from disease. Clip of wool, in general both quantity and quality mean average, although there were one or two exceptional farms.

DUMBARTONSHIRE.—Wheat, 24 to 25 bushels; quantity neither in grain nor straw equal to 1885; $2\frac{1}{2}$ to 3 bushels sown. Not a barley district; the few fields grown showed a fair quantity, but quality very deficient, owing to long wet harvest. Oats, 37 to 39 bushels; quantity better than last year, both grain and straw; quality of early harvested good; later damaged by weather; 3 to 4 bushels sown. Harvest about a fortnight later than usual. Hay, about 1 ton 10 cwt.; quality good. Meadow hay only grown in two or three Highland parishes, and of an inferior description; no permanent Timothy meadows on good land; more productive than 1885, but quality injured by weather while harvesting. Potatoes, 6 to 7 tons; quantity, better than last year; quality inferior; disease variable, and worst in poorer parishes; showed late, and many tubers, seemingly fresh, when dug subsequently gave way; no new varieties; Champions show increasing tendency to disease. Turnips, about 18 to 19 tons; quality good, equal to last year; good braird, and no re-sowing. No damage by insects or weeds. Pastures of average growth and quality. Stock thrived well, and were free from disease. Clip of wool, quality below average; quantity about 15 per cent. deficient.

STIRLINGSHIRE (Western District).—No wheat grown in this district. Barley, about 32 bushels; quality not so good as last year; seed sown, about $3\frac{1}{2}$ bushels. Oats, 34 bushels; both grain and straw were much injured by bad weather, and not so good as last year; seed sown, 4 bushels. Harvest began 14th September, ten days later than last year, and was very protracted from wet weather. Ryegrass hay, 28 cwts.; fair quality; not quite so good as last year. Meadow hay, about the same weight as last year, but not so well secured. Potatoes, fair crop, weighing from 7 to 9 tons, fair good quality, and not much diseased. Turnips, generally a very fine crop; rather softer in quality than last year; no re-sowing required. No injury by insects. Seed sown, from 3 to 4 lbs. Where the ground was properly tilled, no injury was caused by weeds. Pastures, about the same as last year; short in May and June, more abundant in July and August. Stock thrived pretty well towards the end of the season. With the exception of one outbreak of pleuro-pneumonia, generally free from disease. Clip of wool considerably under average in quantity and quality.

STIRLINGSHIRE (Eastern District).—Wheat, 35 bushels; quantity and quality of grain and straw similar to last year; 3 bushels seed sown—this refers to crops secured before the weather broke, fully half the area under wheat was much deteriorated by exposure to the continued rains. Barley, 36 bushels; straw, rather less than last year; the quality of the grain better; 3 bushels seed sown; one third of this crop considerably destroyed by wet weather. Oats, 39 bushels; nearly the whole of this crop was exposed to the continued wet weather, both grain and straw being thereby very much spoiled,—if it had been secured in good condition, it would have been much superior to last year; 4 bushels seed sown. Harvest was 10 days later in beginning than usual. Hay, 27 cwts.; quality superior to last year, being secured in splendid condition; in some districts clover was weak, although well planted; after-math was very good. No meadow hay grown. Potato crop,

similar to last year, viz., Regents, 7 tons; Champions, $6\frac{1}{2}$ tons; little disease when lifted, but in some of the later districts as many as one-third of the Regents have gone bad in the pit; quality good; no new varieties planted. Turnips, Swedes, 17 tons; Yellows, $15\frac{1}{2}$ tons; they braided well; no re-sowing required; quality good; the earliest sown was the heaviest crop; crop generally being heavier than last year. No injury by insects or weeds. Pastures more luxuriant than last year. Cattle thrive well, and were free from disease. Clip of wool an average.

FIFESHIRE (Eastern District).—Wheat, 38 bushels; straw, $1\frac{1}{2}$ tons; a large proportion of this crop damaged by wet weather after being cut, consequently not so good as last year; seed, 3 bushels. Barley, 34 bushels; straw, 1 ton; quality of grain and straw inferior to last year, owing to the wet harvest; seed, 3 bushels. Oats, 40 bushels; straw, 22 cwt.; crop better than last year, but badly damaged by weather; seed, 4 bushels. Harvest ten days behind the usual time. Hay, $1\frac{1}{2}$ tons; quality good. Meadow hay, an average crop, but a small extent grown. Potatoes, $4\frac{1}{2}$ to 5 tons; Champions, Magnum Bonum, and Regents mostly grown; a little disease in the different varieties; a new variety, Beauty of Hebron, a good cropper, and sells well in the London market. Turnips, 15 tons; crop much better than last year; quality good; braided well; no re-sowing required. No injury by insects or weeds. Pastures better than last year, both in quantity and quality. Stock thrive well, and were free from disease. Clip of wool, average.

FIFESHIRE (Middle District).—Wheat, the yield of this crop would be about 30 bushels, and the weight of straw about $1\frac{1}{2}$ tons; the quality of grain and straw equal to an average one, and as good as last year; the seed used, 3 bushels, generally sown broadcast; the greater part of this crop was secured in good order, as it ripened and was cut before the barley. Barley, quantity, 32 bushels; straw, one ton; where this crop was secured in good order, the quality of grain and straw was excellent; the average weight of grain would be 55 lbs., and some parcels in the north part of the county weighed as much as 57 lbs.; when sown broadcast, $3\frac{1}{2}$ bushels are required, by drill, $2\frac{1}{2}$ bushels. Oats, where the crop was secured in good order, it was rather heavier both in grain and straw than it was in 1885; the yield would be about 35 bushels, and straw about 18 cwts.; quality of straw, good; the drought of June prevented this crop becoming an average one; seed used, 5 bushels, broadcast, $3\frac{1}{2}$ bushels when sown by drill machine. The harvest must be styled a late one; it was not begun, generally, until the second week of September, which is about two weeks later than average; on a few farms all the crop was secured in fine order, but the remainder, which comprehended almost all in the district, had from one-third to three-fourths of their crops, principally oats and barley, unsecured, and exposed to thick fogs and drenching rains for four or five weeks, and were much damaged thereby. The hay crop was rather heavier than it was last year, and the quality was excellent, being all secured in fine order; weight about 30 cwts.; well mixed with clover. Meadow hay was also better than it was in the former year; it was also well got; but there is very little of meadow grass made into hay in the district. A considerable breadth of the potato crop was cut down by frost on the morning of the 14th of September, and where the crop was the Champion variety, as the bulk of it was, it was very much reduced in weight thereby; Champion potatoes, even when not cut down prematurely, were a small crop this season; about $4\frac{1}{2}$ tons; where cut down by frost, about 3 tons; Regents and Magnums were good crops, about $6\frac{1}{2}$ tons; no disease; no new varieties. The turnip crop was fully an average one; the braird was good, and no second sowing was required; Yellows, about 14 tons, and the Swedish variety, about 18 tons; the quality

generally is good, although there are a considerable number of fields very much deteriorated by Anberry. No damage was done by insects or by these larvæ. There was little or no damage done by weeds. Pasture grass was considerably better than it was in the former year, and the rains during the autumn kept a full bite for stock until late in the season. Both cattle and sheep thrive fairly well during summer and autumn. Both cattle and sheep have been free from disease and amongst grazing sheep, both ewes and hogs, the death-rate has been an exceptionally small one. The quantity and quality of the clip of wool were up to an average.

FIFESHIRE (Western District).—Wheat, 30 bushels, much as last year as to quantity and quality where well harvested; where not stacked before weather broke, very much spoilt with sprout; seeding, 3 bushels. Barley, 36 bushels; quantity and quality much as last year, where well harvested, but three-fourths out when the weather broke on 27th September, and was mostly much discoloured, but not much sprout; seeding, 3 bushels. Oats, 40 bushels, about half the crop much as last year for quantity and quality, the other half harvested after rain much damaged in colour and a great deal of sprout; seed, 4 bushels. Harvest about a fortnight later than usual. Hay, $1\frac{1}{2}$ tons; early cut hay much as last year for quantity and quality; excellent quality later cut hay, got in showery weather. No meadow hay. Potatoes, $4\frac{1}{2}$ tons; if anything, a better crop than last year; practically no disease; no new varieties of any importance. Turnips, 14 tons; quality quite as good as last year, on medium soil; clay land got too much wet, end of May and early in June; good braird; no re-sowing. No injury by insects or weeds. Pastures of average growth and quality, though cold weather in the first of the season made it backward. Stock thrive fairly well and were free from disease. Clip of wool, average.

PERTSHIRE (South-West District).—Wheat, much the same as last year, in both grain and straw; about 26 bushels; but a large proportion badly harvested and inferior; seed, 3 bushels and upwards. Barley, not so good as former crop; 27 bushels; straw, bad—unfit for anything but litter; weight of grain 53 lbs.; seed, 4 bushels. Oats, where well got, a good crop, and where badly got, both straw and grain very inferior; yield more bulky than last year; weight of grain 38 to 40 lbs.; seed, 5 bushels and upwards. Harvest commenced a fortnight later than usual, and in unfavourable situations, crops much damaged by weather and carried to stack-yards after being long exposed. Hay, good in some places and light in others; average yield, 130 stones, and fairly well secured. Meadow hay much damaged about river sides, but fair quality in the uplands; yield much the same as usual. Potatoes, a fair yield, quite as abundant as last year, and free from disease. Turnips, a very good average crop, running up to 20 tons or thereby; very little re-sowing required. Crops not injured by insects generally; the beetle appeared here and there, but the damage inflicted, not serious. Weeds not so troublesome as usual. Pastures generally good and fed well enough. Stock thrive as well as could be expected. Both cattle and sheep free of disease. Clip of wool, in some cases, as good as usual, but generally lighter than last year.

PERTSHIRE (District of Coupar-Angus).—Wheat, average good crop; 40 bushels; seed, from 3 to $3\frac{1}{2}$ bushels; straw will be equal to ordinary years. Barley, average crop when early sown; about 48 bushels, weighing 47 lbs.; late sown grass smothered a deal when sown but yielding about from 20 to 30 bushels of 52 to 53 lbs.; seed, from 2 to 3 bushels; good straw. Oats, yield about 40 bushels in good land, and early sown 60 bushels; short in straw, grain 40 to 44 lbs.; seed, from 3 to 5 bushels. Harvest commenced about 3rd September, about three days later than last

season ; fine weather on until 27th September, when rain came on, when no satisfactory leading was got afterwards, and not for the last 30 years has there been more damaged grain ; prices of barley having fallen from 28 to 12 shillings per quarter. Hay under average ; 2 tons ; quality in general, good. No meadow hay. Potato crop, from $4\frac{1}{2}$ to 6 tons ; free almost of disease ; growth retarded many places, especially where low lying, with frost, hence the tubers are smaller. Turnip crop, 18 to 22 tons ; little re-sowing ; braird well where early sown ; late sown in dry weather lay for three weeks in ground before brairding, but required no re-sowing. No injury by insects or weeds. Pastures, average better than last year. Stock thrive very well. Generally no disease in this district. Clip of wool, average.

PERTSHIRE (Western District).—No wheat or barley. Oats, average crop. Harvest began about two weeks later than the usual time. Meadow hay, less productive than last year. No injury by insects. Pastures not so good in quality as last year. Stock not so good in condition. Quite free from disease. Clip of wool, under the average, nearly a fourth.

PERTSHIRE (District of Strathearn).—Wheat, about an average crop ; 32 bushels and of fair quality ; but very little grown in the district ; 3 bushels sown. Barley, 36 bushels, or about an average crop, but much damaged by wet weather ; $3\frac{1}{2}$ to 4 bushels sown. Oats, this crop was about an average, or 38 to 40 bushels, and where not secured before the wet weather commenced—which was only in very exceptional cases—was very much destroyed ; 4 to 5 bushels sown. Harvest began about the 12th of September, or ten days later than usual, with fine weather for the first ten days or so, afterwards the worst harvest on record having been experienced, and crop as a whole badly secured. The hay crop was lighter than last year, about 1 ton 10 cwt., but where top-dressing was adopted it proved a full average crop and was secured in first-rate condition. Meadow hay was an average crop and was also generally well secured. The potato crop was under an average in the district, in consequence of early frosts injuring many low lying fields. Early sorts averaged about 5 tons 10 cwt., later kinds slightly more ; very little disease. The turnip crop brairded well with the first sowing, and in most cases little if any second sowing was required, the late rains bringing away any seed not brairded at first ; weight, about 18 tons, though in some cases 20 to 25 tons were grown. There was little or no injury by insects except in very exceptional cases by grub in oats, damage much less than usual. The crops in general were free of weeds and no damage done. Pastures were above the average of last year, both in growth and quality. Stock thrive well on pastures until towards the end of season, when wet weather interfered with their progress ; this, however, was made up for to a certain extent by the long time store cattle were enabled, on account of good weather, to remain outside. Cattle and sheep have generally been very free from disease ; only one case of pleuropneumonia having occurred in the district. The wool clip about an average, and quality fairly good, considering the severe weather of the previous winter, with a slight improvement in price.

PERTSHIRE (Highland District).—No wheat. Barley, 27 to 28 bushels ; grain good ; straw, good ; weight, 52 to 53 lbs. ; seed sown, 4 bushels. Oats (Lea), 36 to 38 bushels ; red land oats, 30 bushels ; quantity sown, 5 bushels. Harvest rather troublesome but generally well got in ; some rather coloured ; harvest ten days to a fortnight later than last year ; quality of straw—early straw, good ; late straw, bad. Clover hay—cold spring—somewhat late, and clover deficient ; average 17 cwt. ; ryegrass better than clover in early places ; late places, clover better than ryegrass.

Meadow hay more productive by 5 cwts.; average, 18 cwts. Potatoes, good crop, and free from disease; weight, 4 to 5 tons; no new varieties sown. Turnips, best crop of the season; weight, 24 to 26 tons; quality good; no second sowing. No damage done by insects. Land easily kept clean from weeds. Pastures late, and generally bare. Stock grew well, but did not fatten well; were free from disease. Clip of wool, weight under average; quality good.

PERTSHIRE (Dunkeld and Stormont District).—Wheat, quantity per acre, 40 bushels; quality good; straw, 80 stone, damaged by the wet season; quantity of seed sown, 4 bushels; very little wheat sown in this neighbourhood. Barley, 48 bushels; quantity of straw about 80 stone; about $\frac{1}{2}$ of the crop badly secured; quantity sown per acre, $3\frac{1}{2}$ bushels. Oats, about 44 bushels; straw, inferior; crop being badly secured; quantity sown, 4 bushels. Harvest began about the 9th September. Hay crop, 1 ton 10 cwt.; quality good. Meadow hay crop much the same as last year. Potato crop from 6 to 7 tons; no disease; no new varieties planted. Turnip crop about 17 tons; quality good; braided well; no second sowing required. No injury by insects and none, to any extent, from weeds. Pastures better than last year. Sheep did well; cattle not up to expectation. Cattle and sheep were free from disease. Clip of wool under average.

FORFARSHIRE.—Wheat, 32 bushels; quality about an average; $2\frac{1}{2}$ bushels sown. Barley, 36 bushels; in low districts, where the grain was saved before the storm, the quality of grain and straw is very good, considerably above an average; in high districts, the quality of grain and straw very bad, grain being almost unsaleable; 3 to 4 bushels sown. Oats, 44 bushels; in low districts, where grain was saved before storm, quality of grain and straw excellent, much above an average; in high districts, extremely bad; $4\frac{1}{2}$ bushels. Harvest began about the usual time. Hay, 1 ton 10 cwts.; quality of ryegrass and clover good, fully as good as last year. Meadow hay about the same, but very little made in this district. Potatoes, 7 tons; quality about an average; without any disease; not aware of any new variety being planted to any extent; Champions very low in price, and smaller yield than Magnum Bonum, which is the popular variety here. Turnips, 19 tons; quality very good where stored before frost, but a great many unstored and mostly spoilt; very well; no second sowing. No injury by insects. No injury by weeds where farming was fair. Pastures, not of average growth and quality in the beginning of season, but grew on all through autumn and were abundant till end of November. Stock thrived very well. In this immediate district they have been free from disease, but a good deal of pleuro-pneumonia in the eastern parts of the county. Clip of wool quite an average.

ABERDEENSHIRE (Buchan District).—Wheat, not grown in this district. Barley and bere was a fair crop this year as regards both grain and straw, but colour in many cases very deficient: the weight of grain would be equal to that of last year; quantity sown, from 3 to 4 bushels. Oats, 36 bushels or $\frac{1}{4}$ qrs. 4 bushels; straw, much in excess of last year, but not nearly of such good quality, having, except in the earlier parts of the district, stood by far too long in the stook, owing to the calm and misty weather which prevailed after cutting, before it could be secured in the stackyard, thus lowering the quality of both straw and grain, which has been at a very low price as yet during the season; from 38 to 42 lbs. in weight; quantity sown about 6 bushels, in some cases more. Harvest commenced about the middle of September, about a week later than last year. The crop of hay was a very fair one, although not quite equal to that of last year; mostly well

secured, and about $1\frac{1}{4}$ to $1\frac{1}{2}$ tons. Meadow hay not much cultivated in the district, but an average crop. Potatoes a very good crop and almost free from disease; from 6 to 7 tons. The turnip crop is superior to that of last year, in fact it is seldom such a crop all over, especially the yellows; Swedes not quite so heavy being rather late in being sown; the former would be from $\frac{1}{2}$ to $\frac{3}{4}$ and the latter fully $\frac{1}{2}$ better than last year; the average will be from 20 to 24 tons; there was some re-sowing, but the braird ultimately came away fairly well. Scarcely any damage was done by insects. There were less weeds than last year, and therefore very little damage done by them. The pasture was rather above the average quality and growth, especially towards the end of the season. Cattle and sheep did well on the grass. Cattle and sheep were both almost free from infectious disease, although pleuro had been prevalent in several places, brought by Irish stock the previous autumn. The clip of wool was about the same as last year, but still low in price, although a rise took place in summer.

ABERDEENSHIRE (District of Formartine).—Wheat, not grown to any extent in this district. Barley and bere much cultivated; was a good crop as regards both grain and straw; this year's crop would be equal to last year's crop in grain and straw; and in early districts, where the crop was harvested and carried to the stackyard before the misty and wet weather set in, is of good colour and heavy weight, from 54 to 56 lbs.; where the crop stood out long in the stock, it was much discoloured by the moist weather and is not so heavy, from 52 to 53 lbs.; quantity, 36 bushels; quantity sown, 4 bushels barley and 3 bushels bere. Oats after lea was a fair crop, thick on the ground but not so lengthy in straw, the cold dry weather in June was the cause of the shortness of the straw; oats after green crop was the best that has been for some years, abundance of straw and superior grain, and where harvested and carried to the stackyard before the moist and wet weather set in, is a nice plump white grain; the want of sunshine and dry bracing weather during the harvest was very trying to the farmers, and much of the crop was carried in a damp state, causing a deal of heating in the stacks, in fact, it was the exception not to see at every farm the work of turning stacks and placing wood in the centre for bosses; much of the crop was spoiled by heating in the stack, and had to be sold at a low price or bruised and given to feeding cattle; weight very various, from 40 to 43 lbs.; quantity, 32 to 40 bushels; quantity sown, 6 bushels. Harvest commenced, last year 11th September, this year 16th September. Hay crop fairly good, especially where top-dressed; about $1\frac{1}{2}$ tons. No meadow hay. Potatoes are not grown in this district to any extent for exportation, principally for home consumption; the crop good and generally free from disease; the quality very superior; about 6 to 7 tons; rather a larger quantity of small potatoes than usual. The turnip crop is one of the best for some years; no second sowing required; the Swedish variety are not so large bulbs as in 1885, but the crop is very close in the drill, and hence a good return per acre; the yellow variety is a splendid crop and an extra heavy one, here again the cold dry weather in June told on the Swedish turnips which are earlier sown than the yellows; the weight of Swedes would be 22 to 24 tons; the yellows from 20 to 26 tons. Very little injury by insects to any of the crop this year. The crops were free from weeds and the land well cleaned. The pastures were fairly abundant. Cattle and sheep did well on the pastures. Cattle and sheep have both been free from all infectious diseases, generally, in this district, although pleuro-pneumonia appeared in two different centres, by the introduction of Irish cattle into the district. The clip of wool was an average in quantity and quality.

ABERDEENSHIRE (District of Garioch).—No wheat grown. The yield of
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barley is above that of last year by 2 bushels; with straw in proportion; and weight 2 lbs. in excess; 38 bushels would be an average; quantity sown, 4 to 4½ bushels. The crop of oats is above that of last year, by about 4 bushels; 40 bushels may be stated as an average; and the weight of grain is also in excess by 1½ to 2 lbs., 42 lbs. being a general weight; a deal of the grain, carried previous to 27th to 30th September, got heated in the stack, and after the latter date what remained in the stook, both straw and grain, sustained considerable damage. Harvest was commenced between the 10th and 16th September, the same as last year, but about three weeks later than in average seasons. The quantity and quality of the hay crop was similar to last year, both as regards ryegrass and clover; and would weigh 1½ tons. No meadow hay. The crop of potatoes in quantity and quality is much superior to last year; in a few instances frost took effect, but not in the general way as last year; the Champion variety is the sort usually cultivated; and no disease reported; the yield would be equal to 6 tons. The Garioch Turnip Growing Association report an excellent crop, 2½ tons and 1 ton 14 cwt. respectively on Swedish and green top yellow turnips, above last year; the crops braided well, and no second sowing required; the average yield would be equal to 18 tons. No loss was sustained by insects. Nor any damage by weeds. The pastures during the season stood out well, and afforded a nutritious bite. Stock thrived well, and generally free from disease. The quantity and quality of the clip of wool was under the average of last year.

ABERDEENSHIRE (District of Strathbogie).—No wheat grown. Barley is not grown largely in this district, the late climate and cold-bottomed soils being more suitable for oats; the Chevalier variety is seldom grown unless on the very earliest farms; owing to the extremely low prices the last two years, the cultivation of barley is becoming more restricted; the crop this year was fully an average as regards grain, but the straw was deficient; the yield this year is about 40 bushels and the weight from 53 to 56 lbs.; the crop is seeded with from 3 to 4 bushels. Oats are considerably above an average in quantity of both straw and grain, and where early secured the quality is fairly good; but all over the district generally, the crop was late, and with the wet and hazy harvest weather, great difficulty was experienced in getting the crop secured, the consequence was that grain and straw were much deteriorated, both with exposure in the stook and with heating in the stack; the quantity is about 42 bushels, and the weight from 39 to 41 lbs.; about 6 bushels is the quantity usually sown. Harvest was general about the 25th September, about the same time as last year, and about three weeks later than in average years. Hay was only a fair crop, but was harvested in good condition, and the quality was good; the weight was about 21 cwt. No meadow hay grown. The potato crop was very good, both in quantity and quality, and free from disease; the yield is from 6 to 8 tons; Champions are mostly grown in this district. Owing to the extremely wet weather in May, only a very limited breadth of Swedish turnips were sown, and such as came to be fit for hoeing turned out a very middling crop; yellows, on the other hand, are the finest crop that has been in this district for years, and average about 22 tons; no second sowing of yellows was required. No unusual damage by insects. On account of the wet month of May, the weeds were difficult to eradicate. Pastures were poor all through the season, owing to the cold wet summer; and, as a consequence, stock did little good on the grass. Cattle and sheep have been free from disease. The clip of wool was fully an average.

BANFFSHIRE (Lower District).—Wheat, none. Barley, 40 bushels, Oats,

40 bushels. Harvest, 10 days later. Hay, 18 cwt. No meadow hay. Potatoes, 3 tons. Turnips, Yellows, 20 cwt., Swedes, 17 cwt. No injury by insects or weeds. Pastures of average growth and quality. Stock thrive well and were free from disease. Very few sheep in the district, but clip of the few equal to average of former years.

MORAYSHIRE (Lower District).—The wheat crop, as to the bulk of straw and quantity of grain, was much about the same as last year; on the best soils, the yield of grain would be 40 bushels, on the lighter soils about 28 bushels; the grain is brighter in colour on account of more sunshine; seed sown from 3 to 4 bushels. The barley, as to bulk of straw and quantity of grain, is below last year, the cause being low temperature at night, on account of more sunshine than last year, the sample is much superior, and the weight of grain higher, 57 lbs. being not uncommon; the return of grain on best soils about 38 bushels; quantity of seed sown, 3 to 4 bushels. Oats are a better crop than last year, both as to quantity and quality; the first part of the season was moist, which is favourable for oats; on good soils the quantity would be 48 bushels, and weight 44 lbs.; quantity of seed sown, from 3 to 4 bushels. Harvest was rather later than the average, but the weather was very dry, scarcely a shower during the whole time, the temperature often was unusually high, causing a good deal of heating in the stack where the crop was too soon led to the stackyard; with that exception the quality of grain and straw is above average. On account of the latter end of the month of May being moist, the hay crop was much heavier than last year, and well harvested; clover was specially good; the weight on best soils would be $2\frac{1}{2}$ tons. No meadow hay. Potatoes were a much superior crop to last year, both as to quantity and quality; there was no injury from frost; the average according to soil would be from 4 to 7 tons. The turnip crop is considerably below last year's; the crop braided well and no second sowing; the latter part of the month of August was too dry, which caused mill-dew to some extent which seriously stopped the bulbing of the roots, the average would be 10 tons below last year's crop, but quality good. There was no damage from insects, but a good deal from a superabundance of rooks. Not more than the usual damage to the crops from weeds, but by far too much. Pastures were of average growth during the season; the rain in May gave them a good start which made them plentiful during the season. Stock thrive on them fairly well, but on account of the fall in prices, they paid badly. There was no disease especially amongst cattle or sheep. The clip of wool was an average both as to quantity and quality.

NAIRNSHIRE.—Wheat, none grown. Barley, quantity, an average; quality, fully an average, 30 bushels; 4 bushels seed. Oats, 36 bushels; 5 bushels seed. Harvest, later, 14 days. Hay crop, rather more. Meadow hay, none. Potato crop, better, 5 tons; no disease; some new varieties with good results. Turnip crop, average; 18 tons; braided well; no second sowing. No injury by insects or weeds. Pastures of average growth and quality with last year. Stock thrive very well. Cattle and sheep free from disease, with exception of one case of pleuro. Clip of wool fair but under average.

INVERNESS-SHIRE (District of Inverness).—Wheat, average yield, about 30 bushels; the quality of the grain was fair; the straw was abundant; the usual quantity of seed sown is 3 bushels. Barley, about 40 bushels, on good land was an average yield, while from 30 to 32 bushels would be an average return on lighter soils; quantity sown on best land, from $2\frac{1}{2}$ to 3 bushels, and 4 bushels on light clay and late lands. Oats vary very much according to soil and climate conditions; some 40 bushels was a fair average on the

best soils, while from 24 to 30 would be the result from cold and light soils; quantity sown from 3 to 6 bushels. Harvest about ten days later than usual; the early part of the harvest was favourable but towards the end it became very unsatisfactory, owing to the bad state of the weather. Hay, on heavy land, there were some very good crops, but, generally, it was lighter than the former year; where it was well manured, some $2\frac{1}{2}$ tons would be common, but 2 tons would be an average yield. Meadow hay, not much in this part of the country. There was a good yield of potatoes and the quality was generally excellent; the average yield would be from 6 to 7 tons; there was no disease. The turnip crop was an excellent one; the braird came away nicely, and the growth continued throughout; no second sowing had to be resorted to; some 20 to 30 tons of Swedes, and from 20 to 25 tons of yellows, according to soil, was an average. Very little damage of any kind done by insects, during the season, damage less than usual. Charlock or wild mustard affected the grain crops on some soils near Inverness but weeds were not more common than usual. Stock thrived very well throughout the season till about August when grass became bare. No disease affected either flocks or herds till December, when pleuro-pneumonia was introduced to Inverness by Ayrshire cows, but the herds affected have been destroyed, and at present no disease is prevalent. Clip of wool about an average in quantity and quality.

INVERNESS-SHIRE (District of Beaully).—Now heat in the district. Barley, about 4 bushels more than last year; average, 4 qrs. of better quality. Oats, better crop than last year by $1\frac{1}{2}$ qrs.; average 5 qrs. of very good quality. Harvest, fourteen days later than the usual time. Hay crop, 1 ton 2 cwt., as compared with last year, 6 cwt. less and quality inferior. No meadow hay grown in this district. Potatoes far better crop than last year; about 6 tons of excellent quality; scarcely any disease. Turnips, bulk much about the same as last season; rather stiff in brairding on heavy soil; but no re-sowing required; average about 18 tons. No damage done by insects worth remarking. Fully cleaner from weeds than the last two seasons, no injury resulting therefrom. Pastures fully as rich as last year. Stock thrived fairly well up to the end of the season. Sheep have been healthy but several cases of pleuro have appeared of late. Clip of wool rather over than under the average and of fair quality.

INVERNESS-SHIRE (Skye).—No wheat or barley grown. Oats, an average yield of 18 bushels; quality of grain and straw rather better than last year; 6 bushels generally sown and sometimes rather more by the crofters. Harvest, from ten days to a fortnight later. Hay crop, quantity varies much, quality not equal to last year. Meadow hay less productive. Potato crop, considerably better, no disease. Turnip crop, quantity varied much, probably from 15 tons downwards; brairded well; only one sowing. Not aware of any damage by insects. Weeds in Skye always damage the crops, but not more this year than usually. Pastures not of average growth and quality with last year. Stock thrived not at all well until August. Cattle and sheep were free from disease. Clip of wool, good, but under the average weight.

INVERNESS-SHIRE (Lochaber).—Wheat, none grown. Barley, practically none grown. Oats, grain not quite so good as last year's; yield about 30 bushels; 6 bushels seed. Harvest, 10 days later than usual. Hay crop, superior to last year; 1 ton 5 cwt. Meadow hay, better crop and well secured. Potato crop, 5 tons 10 cwt.; no disease. Turnip crop, 21 tons; quality very good and superior to last year; brairded well; no second sowing required. Crops escaped all damage from insects in 1886, in this district. Chickweed rather troublesome among turnips and potatoes.

Pastures about average growth and quality. Stock thrive well. Cattle and sheep free from disease, it is believed entirely. Light clip owing to previous severe winter and spring; quality hardly up to average.

ROSS-SHIRE (Western District).—Wheat, none grown. Barley, little or none grown. Oats, a fair crop; straw, good; grain, a good deal shaken by the wind; on the whole better than last year; quantity per acre, $3\frac{1}{2}$ qrs.; seed sown, from 6 to 7 bushels. Harvest began about ten days later than usual, but the crops were secured about the usual time. Hay, quantity about 1 ton; quality good; the crop a light one. Meadow hay, fully as productive as last year; quality good. Potatoes in quality very good, but not so plentiful as last year; crop, about 7 tons; no disease; no new varieties planted. Turnip crop light, from 8 to 10 tons; very little difference from last year; braided fairly well; and no second sowing required. No damage done by insects. No injury done by weeds beyond the usual caused by chickweed. The early part of the season was very cold and dry, consequently pastures kept very bare, but towards September there was improvement for the better. Stock improved as the season advanced, and in November were fully as good as former years. Cattle and sheep quite free from disease. The clip of wool was of good quality, but a shade lighter than previous clip.

ROSS-SHIRE (Districts of Dingwall and Munlochy).—Wheat, the extent grown still reduced; quality is fine this season; quantity over last season, say 32 bushels; quantity and quality of straw, average; seed, about 4 bushels. Barley, quantity over last season, say 36 bushels; quality is superior; quality of straw, good, quantity slightly less; seed, $3\frac{1}{2}$ to 4 bushels. Oats, quantity about the same as last season, say 36 bushels; quality is above last year; the quality of straw was very fine, perhaps the quantity may be a little less; seed, 4 to 5 bushels. Harvest began about 31st August or 5 or 6 days later than last season, also later than average of seasons; the weather was variable but good; harvest was finished in about one month's time, some later parts and places, and harvesting after 1st October was very tedious owing to wet dull weather. Hay was secured in very fine order; was an average crop; clovers grew well on the whole; the crop would weigh 26 to 28 cwt. No meadow hay. The potato crop was superior to last season by fully 1 ton, say 5 tons; quality was fine. The turnip crop was quite up to last season in bulk; Finger and Toe was more prevalent; very little re-sowing was needed; weight of bulbs, say 18 tons; crop braided slowly owing to wet weather. No injury by insects. Weeds were less prevalent this season. The growth of pastures was much less than usual, owing to cold weather in May and June, and later on severe drought was experienced. Consequently stock did not thrive so well, but were free from disease. The clip of wool was fair in quality and weight.

ROSS-SHIRE (Easter Ross, Mid Ross, and Cromarty).—Wheat, from $4\frac{1}{2}$ to 5 quarters; only best land put under wheat; none grown in Cromarty. Barley, from $4\frac{1}{2}$ to 5 quarters 2 bushels. Oats, from 5 to $5\frac{1}{2}$ quarters. Harvest ten days late. Hay one-third lighter in Easter Ross from 1 ton to 1 ton 10 cwt. Meadow hay, none in the district. Potatoes, better; from $6\frac{1}{2}$ to 8 tons; no disease—not to any extent. Turnips, from 19 to 22 tons; quality quite as good; braided very well; no second sowing required. No injury by insects. A few yellow weeds; much the same. Pastures not the growth, but quite the quality. Stock thrive well, and were free from disease. Clip of wool much the same.

SUTHERLANDSHIRE.—Wheat, not grown in the county. Barley, about 36 bushels under average weight; grain and straw, fair quality and bulked

well. Oats, about 38 bushels; both grain and straw of good quality. Harvest began at the usual time. The hay crop would not exceed two-thirds of last year's crop. Meadow hay, much the same as last year. Potatoes are not much grown for sale, yield similar to last year's crop. Turnips, the crop braided well and second sowing was exceptional; it is a fair average crop of sound bulbs. No injury by insects or weeds. Pastures were not equal to last year in growth but of good quality. Stock thrive well. One case of pleuro-pneumonia. Wool was of good quality but much under the weight of last year's clip on hill farms.

CAITHNESS-SHIRE.—Wheat, not grown in the county. Barley not much grown, as here is found more reliable. Bere, fair average crop, 4 qrs.; weight, 1 to 2 lbs. above that of last year; seed, 4 bushels. Oats, a very bulky crop, 34 bushels, 2 bushels over average; quality better than last year and less small corn; although a bulky crop the produce is not in proportion to the bulk; the weight also is at least 1 lb. over last year; seed sown, 5 to 6 bushels. The season, though not as a whole unfavourable, was to some extent sunless and colder than usual. Hence harvest was nearly three weeks later than the average; the weather was generally cold and dry; there was no damage done to the grain in stock, and the whole crop was secured in good order. Hay, rather a light crop and under average; clover and ryegrass fairly mixed; weight, about 1 ton 5 cwt. Meadow hay, very little grown. Potatoes, a fair crop, except in certain situations where they were destroyed by early frost, first in July and again in August; in the county, potatoes are only grown for home use, and weight of crop not ascertained. Turnips turned out a fair crop, average about 17 tons; at the time of braiding the temperature was low and the plant came on slowly at first; no re-sowings required. No special injury by insects, although the oat-grub did some injury, but less than usual in the county; some localities suffered a good deal. No special damage from weeds. Pastures did fairly well, as a whole, better than the preceding year. There did not appear to be any good cause for complaint as to the manner in which stock seemed to thrive, though with falling markets the results could not be satisfactory. The county remains free from disease in cattle and sheep. The quality and quantity of the clip were up to the average. It might be interesting to endeavour to ascertain why Caithness half-breed wool possesses a peculiar value, it seems, usually, to bring from 1½d. to 2d. per lb. above the half-bred wool of other districts, for that class of wool 13½d. per lb. was the figure at the autumn sales.

ORKNEY.—No wheat grown. Very little barley grown. Bere, an average crop; in some districts suffered from a gale on 9th September. Oats, 3½ quarters; average weight, 39 to 40 pounds; a good deal shaken by the gales of 27th and 28th September; seed, 6 bushels. Harvest later than usual, but about the same time as 1885; cutting was got through in good time, but leading was much prolonged by mild damp weather. Hay, a good crop and well secured. Very little meadow hay. Potatoes, a good crop and of fine quality. Turnips, a fair crop, but not equal to 1885; braided well; a good many shot, and the crop grew long in the season till checked by frost. No injury by insects. No injury by weeds. Pastures good. Stock thrive well and were free from disease. An average clip, both as to quality and quantity.

SHEPHERD (District of Lerwick).—No wheat. Barley, better than last year; seed, 3 bushels. Oats, better than last year; seed, 3½ bushels. Harvest a fortnight later than usual. Hay, quantity and quality of both superior to last year. Meadow hay, much the same as last year. The yield of potatoes was less in quantity than last year; quality, good; no disease;

no new varieties. Turnips, quality and weight much the same as last year's crop; braided well; only one sowing required. No damage by insects. Average weeds. Pastures rather better than last year, above an average. Stock thrive fairly well and were free from disease. Clip of wool, quality good, but rather under an average in quantity.

THE METEOROLOGY OF 1886.

An examination of the accompanying Table, which compares the prevalence of winds in 1886 with the averages of previous years, tells us that S.E., S., and S.W. winds were 19 days fewer than usual, and N.E. and E. winds 15 days, and W. winds 6 days more than usual. This extraordinary excess of easterly winds and deficiency of southerly winds resulted in the weather of the year, which will be long remarkable. In every month, except April and December, the sunshine was under the average, the deficiency for the whole year amounting to 199 hours. The amount of sunshine for the year was the same as in 1879, which was a very disastrous year to the farming interest; but there were redeeming specialties in the weather of 1886, which will be afterwards noticed.

Table showing for Wind Direction and Force, and for Sunshine, the excess above, or the defect from, the averages of previous years:—

	DIRECTION OF WIND—DAYS.								Calm or Var.	Force. Lbs p.sq ft	Hours of Sunshine.
	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.			
January, .	+2	+1	+2	-1	-3	-3	+1	+1	0	+0.95	-11
February, .	0	0	+4	0	0	-2	-1	-1	0	-0.61	-19
March, .	-1	-1	+2	+2	+2	0	-2	-2	0	+0.49	-25
April, .	0	+1	+1	-1	-1	0	+1	0	-1	+0.90	+13
May, .	-1	+1	+2	0	0	0	-1	-1	0	+0.58	-56
June, .	0	0	-2	-1	0	-1	+3	+1	0	+0.84	-1
July, .	0	-1	0	0	-1	-1	+2	+1	0	+0.84	-18
August, .	-1	-1	-1	-2	+1	+2	+3	0	-1	+0.37	-29
September, .	0	0	+2	-1	0	0	0	-1	0	-0.41	-13
October, .	-1	+2	+4	+1	-1	-1	-2	-2	0	0.00	-36
November, .	-1	0	-1	-2	0	+2	+1	+1	0	+0.50	-7
December, .	+2	0	0	-2	-2	-3	+1	+3	+1	+0.27	+3
Year, . .	-1	+2	+13	-7	-5	-7	+6	0	-1	+0.39	199

The temperature of the year was everywhere under the average, the greatest deficiency occurring in south-western counties,

where the mean temperature was two degrees under the average, and the least in the north, where the deficiency was a little less than one degree. A similar low temperature prevailed over the whole of the British Islands, the lowest occurring in all the districts immediately surrounding the Irish Sea.

Except in three small patches, the annual rainfall was under the average, the greatest deficiency being around the Moray Firth and the southern parts of the Firth of Clyde, where the rainfall only amounted to three-fourths and four-fifths respectively of the averages of past years. On the other hand, the rainfall was above the average in the south-eastern counties, the excess reaching 10 per cent. in several places—in Kidcudbrightshire and Wigtownshire, and in the Island of Islay, where the excess was even greater than in the south-eastern counties. Taking Scotland as a whole, the rainfall of the year was 37·93 inches, or 1·72 inch less than the average.

JANUARY.—The mean temperature of the month was 3°·2 under the average, the days being 2°·9 and the nights 3°·5 colder. The deficiency was due to seven days' prevalence of northerly and easterly winds above the average, and was spread over all parts of the country in a singularly equable manner from North Unst to the Mull of Galloway.

The rainfall was 4·42 inches, being 0·34 inches under the average. It was above the average in all northern and eastern districts, and at a very few scattered places in the west, the amount being nearly double the average in a few places, and at a large number of places the excess was a half to three-fourths above the average. In the west, from the Island of Lewis to the Solway, the rainfall was generally under the average, the greatest deficiency being a fourth short of the average in Skye.

FEBRUARY.—The temperature was 3°·9 under the average, the days being 4°·1 and the nights 3°·7 colder, and east winds prevailed four days more than the average. The deficiency was less regularly spread over the country than in January. The depression of temperature was greatest in south midland districts, exceeding 5°·0 in the upper reaches of the Tweed, Clyde, Annan, and Nith; and least in the north-west and north, where in many localities it was less than 2°·0.

The rainfall was 1·37 inch, or 43 per cent. under the average. No rain gauge collected the mean fall for the month. The deficiency was from 10 to 20 per cent. greater in south-eastern than in north-western districts, but otherwise it was distributed over all districts with unusual regularity.

MARCH.—The temperature was 2°·3 less than the average, the days being 2°·5 and the nights 2°·0 colder. The manner in which the deficiency was spread over the country closely resembled that of the previous month, the greatest depression of

temperature below the mean being in southern districts, where generally it was more than $3^{\circ}0$; and the least, in the north-west and north, where the defect from the average was less than a degree.

The rainfall was 0.32 inch, or 9 per cent. above the average, but its distribution over the country was most unequal. To the north of the Grampians, and in the counties of Argyll and Ayr, it was under the average, the greatest deficiency being at northern stations, where generally only about half the rainfall of March was collected. Elsewhere the rainfall exceeded the mean, and over large districts very greatly so, being more than double the average at stations in Kincardineshire and East Lothian. The heavy rains did not extend any great distance inland from the east coast.

APRIL.—The temperature was $1^{\circ}3$ under the average of the month, the days being $0^{\circ}9$ and the nights $1^{\circ}6$ colder. Everywhere the mean temperature was under the average, the deficiency being greatest in the south, where in Wigtownshire it was $2^{\circ}3$; and least in the north-west and north, diminishing most in a northerly direction, so that at North Unst temperature was $0^{\circ}4$ above the average of April.

The rainfall was 0.32 inch, or 8 per cent. under the average. Its distribution was very irregular. In the north-west of Scotland, and through the central districts, from Ross-shire to the head of Clydesdale, it was above the average, being fully 50 per cent. above it in Shetland and the north of Lewis, and fully 30 per cent. in the west of Sutherland, the south of Inverness-shire, and west of Perthshire. Everywhere else it was under the average, the greatest deficiency being in the north-east, from Inverness to the Firth of Tay, where in many places less than half the average was collected. In the extreme south-west, the deficiency was also about a half.

MAY.—The temperature was $1^{\circ}8$ under the average, the days being $2^{\circ}3$ and the nights $1^{\circ}4$ colder,—a result mainly due to the small amount of sunshine, which was fifty-six hours fewer than the average of previous Mays. The deficiency of temperature was greatest in the south and south-west of Scotland, where it fully exceeded $3^{\circ}0$, and least in the north and north-west, where in several localities it scarcely amounted to a degree.

The rainfall was 1.37 inch, or 62 per cent. above the average. In the Outer Hebrides, Skye, the west of Ross-shire, and the extreme south-west of Argyll, the rainfall was slightly under the mean, but in every other part of the country it was above it, and very largely so over all eastern districts from Wick southwards. On the foreshores of the Firths of Moray and Forth, considerably more than double the rainfall of the month was collected; and it is remarkable that these exceptionally

heavy rains extended far inland, even to the upper reaches of the Dee and the Tweed.

JUNE.—The temperature was $1^{\circ}9$ below the average, the days being $1^{\circ}4$ and the nights $2^{\circ}3$ colder. We have seen in previous months that southern districts were relatively colder than the northern, but in June this state of things was reversed. Temperature was now relatively coldest in the north-west and north, the deficiency being in many places upwards of $3^{\circ}0$, whereas in the south-east and south the deficiency was only about half that amount. During the first fortnight of the month, temperature was only slightly below the average, being indeed a little above it in some districts during the second week,—thus forming a break in the great cold of the spring and early summer, of no small benefit to the crops at that season.

The rainfall was 1.12 inch, or 41 per cent. below the average. Except in Shetland, and in the counties of Caithness and Sutherland, where the rainfall was about a third above the average of June, it was everywhere below it, and markedly so, the deficiency to the south and east of the Caledonian Canal being generally from 50 to 70 per cent.

JULY.—The mean temperature was $1^{\circ}0$ under the average, the days being $0^{\circ}7$ and the nights $1^{\circ}3$ colder. The depression of temperature was greatest in the north and north-west, where in some places it was $2^{\circ}0$; and least in the east and south and midland districts, being in a large number of places less than half a degree. But whilst the mean temperature of the whole month was rather low, the first and fourth weeks were characterised by high temperatures and warm genial weather in all parts of the country except the extreme north. The weather of the intervening fortnight was very cold. These two warm weeks were of the utmost advantage to the crops at these critical seasons of their growth. Over a large part of Scotland the temperature of the first week was from $3^{\circ}0$ to $4^{\circ}0$ above the mean of that time of the year.

The rainfall was 0.28 inch, or 9 per cent. above the average. Its distribution over the several districts was somewhat irregular, being above the average in the counties of Berwick, Peebles, Selkirk, East Fife, Forfar, Kincardine, Orkney, Shetland, Inverness, and Argyll; and under the average elsewhere. In Shetland, double the average amount fell; in Orkney and the eastern counties named above, from a third to a half more than the average. On the other hand, the deficiency, where it occurred, varied from a half to a fifth of the average.

AUGUST.—The temperature was $0^{\circ}6$ under the average, the days being $0^{\circ}5$ and the nights $0^{\circ}7$ colder. Over the west generally, temperature was about a degree and a half under the

average, but in the east it reached the average in several localities, and closely reached it in all—a difference occasioned by a prevalence of six days above the mean of southerly and westerly winds. Of still greater importance is it to mark the tract of fine dry warm weather, which set in about the middle of the month, and was so seasonable for the ripening of the crops.

The rainfall was 1·36 inch, or 40 per cent. less than the average. Except over a few restricted breadths in Caithness, the Lewis, and West Argyllshire, the rainfall of the month was everywhere under the average. Over nearly the whole of eastern and midland districts south of the Dornoch Firth less than half the rainfall of August was collected; but in western districts the deficiency was only a third of the average, these districts being more exposed to the south-westerly winds which so largely predominated.

SEPTEMBER.—The temperature was 0°·6 under the average, the days being 0°·2 warmer and the nights 1°·3 colder than the mean. This deficiency of temperature was pretty equally distributed over all parts of the country.

The rainfall was 0·29 inch, or 8 per cent. above the average; but its distribution over the country was very unequal. If we except Kintyre and Ayrshire, the rainfall was above the average over the whole of the western districts south of the Grampian range, together with West Perthshire and West Fife. But in every other part of the country the rainfall was less than the average. In the west of Perthshire it was three-fourths, and at Greenock a half above the average; and, on the other hand, over nearly all strictly eastern districts there was a deficiency varying from a third to a half of the average fall.

OCTOBER.—The temperature was 2°·9 above the average, the days being 2°·3 and the nights 3°·4 warmer. This is the first month of 1886 during which the temperature exceeded the average, the mean being 7°·0 higher than that of October of 1885. The excess was greatest in eastern and midland districts, and less in south-western, being only 1°·5 above the average at the Mulls of Kintyre and Galloway.

The rainfall was 0·22 inch, or 5 per cent. less than the average. In all eastern districts south of the Tweed the rainfall was above the average, being in a good many districts a half more. It was slightly above the average in parts of the counties of Ayr, Wigtown, and Kirkeudbright contiguous to each other. But over the rest of Scotland considerably less than the average rainfall of October was collected, the deficiency in many northern and midland districts amounting to a half of the average.

NOVEMBER.—The temperature was 2°·4 above the average, the days being 2°·5 and the nights 2°·2 warmer than usual. The excess of temperature was pretty equally distributed over

the country, being however somewhat greater in the north-east than in the south-west.

The rainfall was all but exactly the average of the month. The rainfall was under the average in Shetland, Orkney, Caithness, Sutherland, at strictly eastern districts from the Don to the Lammermoors, in Lanark, Renfrew, and south-western districts, the greatest deficiency from a third to a half the average occurring in Orkney, and parts of the mainland adjoining, and between the Don and the Firth of Forth. Elsewhere it was above the average, but nowhere was an excess of a fourth above the average recorded.

DECEMBER.—The temperature was $5^{\circ}0$ under the average, the days being $4^{\circ}4$ and the nights $5^{\circ}5$ colder. Along with this low temperature there was an unusual excess of northerly and deficiency of southerly winds. As happens in hard winters, the severity of the cold was most felt in strictly inland and upland situations. Thus in the west of Perthshire temperature was $6^{\circ}2$ under the average, whilst at Rothesay it was only $3^{\circ}9$, and at the Bell Rock $3^{\circ}0$. At Braemar it was $6^{\circ}8$ under the mean. Since the Meteorological Society was established in 1855, the three coldest Decembers on the mean of all Scotland were 1878, 1874, 1886, in which years the means were respectively $30^{\circ}7$, $30^{\circ}9$, and $33^{\circ}0$.

The rainfall was again all but exactly the average fall of the month, but its distribution was singularly unequal. Over the foreshores of the Firth of Forth, Moray, and Pentland, in Orkney, the Lewis, Islay, South Ayr, and Galloway, it was above the average, the greatest excess being 88 per cent. above the average at the Mull of Galloway, 64 on the East Lothian and Berwick coast, and 48 at Gordon Castle. Over the whole interior of the country enclosed within the above areas, the rainfall was under the average, the greatest deficiency, from 30 to 46 per cent., occurring in the upland districts of the Spey, Forth, and Tay.

The harvest of 1886 was generally about a fortnight late. In parts of the counties of Perth, Argyll, Haddington, Forfar, and Sutherland cutting is, however, reported to have begun about or only very shortly after the usual time. In late districts the commencement was relatively later than elsewhere; and accordingly, in these districts where little had been secured in the farmyards before the weather broke on September 27th, the harvest proved to be a peculiarly disastrous one.

The wheat crop was on the whole up to the average, exceeding it in Strathclyde, Roxburghshire, the shores of the Firth of Forth, and about Dingwall; and falling a little short of it in Galloway, Berwickshire, and Dumbartonshire. The barley crop was above the average in nearly all eastern districts, but under

it in places more or less open to the west. If we except parts of the counties of Inverness, Argyll, Perth, Roxburgh, and of Galloway, where the average was scarcely reached, the oat crop was a very good one over Scotland.

The harvest of 1886 was a very remarkable one, inasmuch as, notwithstanding the low mean monthly temperatures which had prevailed, the grain crops, at the commencement of cutting, gave promise of a fine harvest. This was due to peculiarity of the weather of the summer, periods of remarkably fine weather being intercalated at the critical seasons for growth and ripening of the grain. Over large breadths, including all the later districts, the crops were most seriously damaged by the persistent broken weather which set in on September 27th.

Potatoes were everywhere a full average crop, except in the extreme south-western districts, from Crinnan to the Solway, where the crop was under the average; and in the central districts lying between Bute and Forfarshire, which are less protected from south-westerly winds than the other districts on the east side of the country, the crop was not more than an average one. In these two districts, or from the Solway to Crinnan and eastward through central districts as far as Stirling, the crop suffered more or less from disease. In the district where there was more than an average crop there was no disease.

Over all Scotland the turnip crop was a fine one, being considerably above the average, except in the extreme south-western, north-western, and northern districts, where the yield only came up to the average. Only in Moray and West Ross is the crop reported to have been deficient, owing largely to the droughts of spring.

In several districts, especially in the north, no inconsiderable amount of damage was done to the green crops by the early frosts which occurred in July, August, and September. Droughts, or only light rains, occurred over widespread districts for the five weeks beginning April 6th, the four weeks from the middle of June, the whole of August, and the first half of September. It may be remarked that in Shetland, from the beginning of April to the end of August, the weekly mean temperatures only rose once to the average of the season, and the rainfall was relatively larger and more frequent than it was to the south; and from these specialties of the weather it resulted that in these northern islands the grain crops were fully a month late, but they were long in the straw, and before the weather broke gave promise of a full average. On the other hand, in the best agricultural districts high temperatures ruled at intervals, with a markedly small rainfall, and there, consequently, straw was light, but the quality of the grain very good where it was housed before the 27th of September.

TABLE No 4.—ESTIMATED TOTAL PRODUCTION OF TURNIPS AND MANGOLDS in the Year 1886, Acreage under these Crops, Estimated Average Yield per Acre, and Estimated Yield per Acre Above and Below an Ordinary Average Crop, in each of the COUNTIES of SCOTLAND

COUNTIES	TURNIPS				MANGOLDS				
	Total Produce in 1886	Acreage in 1886	Average Yield per Acre		Total Produce in 1886	Acreage in 1886	Average Yield per Acre		
			Ordinary Average	1886 computed with Ordinary Average			Ordinary Average	1886 computed with Ordinary Average	
									Above	Below	Above	Below
Aburdeen,	Tons 1,416,386	Acres 91,616	Tons 1,46	Tons 0	Tons 24	Acres 2	Tons 12,00	Tons 14,00	Tons 2,00
Argyll,	70,134	5,417	1,87	1,46	6,9	51	12,92	1,49	2,77
Ayr,	13,745	7,421	19,29	1,7	8,40	603	16,02	0,51	—
Baird,	108,140	24,112	1,18	1,8	18	150	18,00	—	6,40
Baird,	4,09,165	29,000	1,18	1,7	9,206	1,7	14,72	21,02	—
Bute,	10,470	1,080	7,99	10,5	89	2	9,77	10,10	—
Caithness,	21,98	14,01	1,17	1,83	—	2	—	—	0,93
Caithness,	14,451	9,96	1,12	1,54	67	7	7,11	7,11	—
Caithness,	18,146	1,547	11,73	10,06	920	26	12,11	24,19	5,74
Dumfriess,	939,404	20,000	10,98	17,13	710	37	11,13	14,20	1,50
Edinburgh,	212,450	12,219	17,99	14,24	6,13	46	19,11	19,56	0,78
Edinburgh,	2,40,017	11,746	16,46	1,94	172	9	7,00	10,00	9,00
Edinburgh,	27,432	27,910	17,01	1,44	154	22	17,17	1,91	0,13
Edinburgh,	279,047	10,078	19,41	17,19	310	40	11,77	1,91	1,01
Edinburgh,	299,137	11,452	1,41	14,62	71	3	21,00	2,60	—
Edinburgh,	177,019	17,517	12,17	13,97	79	—	—	—	—
Edinburgh,	21,129	2,87	13,77	19,44	1,40	—	—	—	—
Edinburgh,	3,026	2,87	13,77	19,44	0,29	—	—	—	—
Edinburgh,	2,86,664	1,991	18,7	17,12	0,1	—	—	—	—
Edinburgh,	172,296	9,240	1,1	17,07	1,5	46	20,76	19,06	4,84
Edinburgh,	71,140	4,031	17,76	15,29	0,1	49	1,12	11,00	1,20
Edinburgh,	67,378	4,113	11,36	14,41	1,17	—	9,60	18,00	—
Edinburgh,	93,062	11,51	17,77	16,51	0,98	—	—	—	—
Edinburgh,	7,706	4,402	16,17	17,17	0,1	—	—	—	—
Edinburgh,	47,741	20,816	1,14	1,9	1,41	14	1,1	12,00	7,47
Edinburgh,	40,028	2,2	11,90	17,17	0,77	4,8	43	11,68	1,19
Edinburgh,	271,144	11,908	11,01	11,91	1,94	6	22,40	24,19	1,68
Edinburgh,	442,1	24,17	16,17	1,5	2,17	330	1,1	23,11	10,82
Edinburgh,	4,5,55	2,858	13,20	15,5	0,02	—	—	—	—
Edinburgh,	18,315	1,314	13,20	13,20	0,71	30	10,00	11,83	1,38
Edinburgh,	70,517	4,671	14,5	14,5	0,89	27	23,00	22,13	—
Edinburgh,	14,244	2,981	14,19	17,0	—	4,955	10,10	—	—
Edinburgh,	271,473	15,719	17,72	19,01	2,9	—	—	—	—
Total,	7,110,217	15,723	10,80	15,94	0,50	21,40	1,44	1,10	17,79

As computed from Returns furnished by Districtors in 1886

+ Experimental Crop

As computed from Returns furnished by Landowners in 1886

† Experimental Crop

TABLE NO. 6.—NUMBER OF HORSES, CATTLE, SHEEP, AND PIGS IN EACH COUNTY OF SCOTLAND

COUNTIES.	HORSES (including Ponies)			CATTLE			SHEEP			Pigs	
	Used solely for Agriculture, &c.	Kept solely for Breeding	Total	Cows and Heifers in Milk on 1st of July.	Other Cattle		Total	1 Year Old and above	Under 1 Year		Total.
					2 Years of Age and above	Under 2 Years of Age					
1 Aberdeen	20,870	5,776	26,646	45,597	40,580	80,978	164,125	110,707	48,330	153,037	8,612
2 Argyll	4,429	2,718	7,147	23,777	16,471	22,819	62,927	686,371	268,427	954,798	4,080
3 Argyll	6,400	2,137	8,537	46,688	19,455	31,973	94,091	397,841	115,391	513,275	13,081
4 Banff	6,066	1,846	7,912	17,600	6,790	28,067	43,447	82,171	20,907	103,078	3,046
5 Berwick	4,187	1,169	5,356	8,616	4,686	8,486	16,918	144,780	128,748	268,492	8,048
6 Bute	2,123	940	3,063	4,016	1,701	3,486	16,918	90,010	11,893	101,903	780
7 Caithness	4,057	1,152	5,209	7,312	4,095	10,461	20,871	64,184	36,638	100,822	1,563
8 Clackmannan	628	1,041	1,669	1,627	940	1,469	8,982	8,786	8,016	16,802	1,673
9 Dumfriesshire	1,253	609	1,862	7,895	2,628	8,802	12,916	45,698	20,444	66,142	882
10 Dundee	5,446	1,862	7,308	18,623	1,748	24,984	67,575	289,780	160,974	450,754	10,819
11 Dunblane	3,452	4,173	7,625	12,902	2,786	4,201	96,056	96,056	68,037	164,093	8,784
12 Edinburgh	9,929	1,079	11,008	7,140	1,625	12,812	33,085	33,085	20,516	53,601	2,871
13 Elgin	7,119	4,041	11,160	10,096	13,466	10,462	43,018	43,018	40,670	83,688	6,687
14 Forfar	8,129	1,646	9,775	11,867	16,976	19,959	43,871	43,871	4,900	48,771	6,420
15 Haddington	8,122	4,322	12,444	11,867	3,429	5,497	8,810	71,792	51,061	122,853	2,196
16 Inverness	6,743	2,338	9,081	21,411	10,086	22,072	63,370	476,015	177,607	653,622	3,289
17 Kincardine	5,609	4,984	10,593	6,935	5,842	12,639	24,911	21,362	9,774	31,686	2,392
18 Kinross	611	907	1,518	1,078	1,465	3,265	5,501	17,040	11,193	28,233	416
19 Kirkcubright	2,817	1,041	3,858	14,094	13,630	16,624	44,545	212,740	112,011	324,751	6,480
20 Lanark	5,448	2,106	7,554	37,180	1,614	20,891	71,700	1,40,665	72,655	213,320	9,320
21 Leithgow	1,322	784	2,106	1,413	4,491	4,019	11,759	11,081	6,907	17,931	1,332
22 Nairn	913	815	1,728	1,820	747	3,848	5,910	11,090	4,087	15,147	1,607
23 Orkney	4,980	1,220	6,200	8,611	8,449	19,800	26,128	17,645	14,894	32,539	3,094
24 Shetland	944	4,615	5,559	8,611	7,075	8,641	52,227	52,203	84,678	136,881	9,416
25 Peebles	885	261	1,146	1,940	1,310	6,222	22,327	112,197	70,276	182,473	800
26 Perth	10,305	3,026	13,331	19,614	21,855	86,746	78,267	148,555	195,100	343,655	8,095
27 Renfrew	2,862	1,055	3,917	16,054	3,993	26,131	20,412	19,722	10,709	30,431	1,874
28 Ross and Cromarty	8,884	1,561	10,445	18,467	8,993	17,477	42,492	200,212	197,820	398,032	6,347
29 Roxburgh	8,678	679	9,357	4,487	6,119	7,400	17,103	2,142	89,866	92,008	3,951
30 Selkirk	47	91	138	1,025	481	1,082	2,195	88,566	68,672	157,238	406
31 Stirling	9,176	1,440	10,616	10,745	8,684	9,903	29,122	72,900	87,707	160,607	1,775
32 Southland	2,015	660	2,675	5,776	2,411	12,506	185,961	185,961	89,864	275,825	1,087
33 Wigtown	8,977	1,549	10,526	20,940	4,411	13,707	43,728	68,084	40,909	108,993	9,169
Total	142,077	49,066	191,143	417,490	204,133	478,656	1,167,279	4,304,778	2,208,826	6,513,604	121,880

TABLE No 7—QUANTITIES AND VALUES OF THE IMPORTS OF
LIVE CATTLE, SHEEP, AND SWINE, 1884 AND 1885

	QUANTITIES		VALUES	
	1884	1885	1884	1885
	No	No	£	£
Live Cattle,	425 507	373 078	8,271 020	7,046,477
Live Sheep,	947 042	750 866	2,149,704	1,621,029
Live Swine, including Sucking Pigs,	26,437	16,522	94,153	63 248
Total,	1,396 986	1,140,466	10,504,877	9,734,754

TABLE No 8—QUANTITIES AND VALUES OF THE IMPORTS OF BEEF,
MUTTON, PORK, BACON, HAMS, FISH, EGGS, BUTTER, &c, 1884 AND 1885

	QUANTITIES		VALUES	
	1884	1885	1884	1885
	Cwts	Cwts	£	£
Meat—				
Beef, fresh,	573,550	902,951	2,377,177	2,945,415
Beef, salted,	212,569	298,915	421 299	422,131
Mutton, fresh,	503 194	572,648	1,411,051	1,496,317
Unenumerated, salted or fresh,	1,472	27,776	60,823	80 156
„ preserved other than by salting,	450,990	527,759	1,394 665	1,549,796
Pork, salted and fresh,	337 520	389 656	620,071	689,711
Bacon and Hams,	3,413,431	4,058,454	9,740,851	8,650,668
Total,	5 819,261	6,712,559	15,025 966	
	Cwts	Cwts	£	£
Fish,	1,336,422	1,520,570	2,040,800	1,994,614
Poultry and Game (see Value),			670,609	655,997
Butter (including Butterine),	2,475,436	2,401,373	12,543,455	11,568,508
Cheese,	1 927,139	1,899,932	5,001,635	4,069,244
Lard,	691,827	871,210	1,535,123	1,606,485
Eggs,	993,606,760	1,002,785,160	2,910,493	2,931,297
Total,			24,710,115	22,820,585

TABLE No 9—QUANTITIES AND VALUES OF THE IMPORTS OF WHEAT
AND WHEAT FLOUR, 1884 AND 1885

	QUANTITIES		VALUES	
	1884	1885	1884	1885
	Cwts	Cwts	£	£
Wheat,	47,306,136	61,498,964	19 901 794	24,063,913
Wheat Flour,	15,095,301	15,832,943	10 113,763	9,670 440
Total,	62,401,437	77,331,907	30,015,557	33,734 353

TABLE No 10—QUANTITIES AND VALUES OF THE IMPORTS OF BARLEY,
OATS, INDIAN CORN, RYE, MEAL, &c, 1884 AND 1885

	QUANTITIES		VALUES	
	1884	1885	1884	1885
	Cwts	Cwts	£	£
Barley,	12,903,015	15 67 160	4 220 411	4,022,356
Oats,	12 921 568	13,067,159	4,191 791	4,200,707
Indian Corn,	24,750,464	31 226,700	7,280 223	8 485 611
Peas and Beans,	5,453,541	5,399 963	1,812,115	1,712,226
Rye	220,579	241 185	70 561	10 749
Buckwheat,	64,555	52,600	21,023	26,612
Total,	56 400,323	65,913,927	17,629 044	19,166,457
	Cwts	Cwts	£	£
Oatmeal,	429,157	480,687	242,957	268,513
Indian Meal,	16,062	13,722	22,970	18,511
Barley Meal,				
Rye Meal,				
Pea Meal and Bean Meal,	353,037	267,510	100,067	70,717
Buckwheat Meal,				
Meal unenumerated,				
Total,	798,276	766,929	367,004	358,040

TABLE NO. 11.—AVERAGE PRICES OF VARIOUS KINDS OF ANIMALS, DRAD MEAT, AND PROVISIONS, 1884 AND 1885.

Kinds of Animals, Dead Meat, &c.	1884.	1885.
Animals—Oxen and Bulls from all countries, each	£21 19 10	£21 2 10
„ Sheep, including lambs, from all countries, „	9 5 5	2 3 3
Bacon—From all countries, per cwt.	2 9 2	2 0 6
Hams—From all countries, „	2 19 1	2 10 10
Beef, salted—From all countries, „	1 19 8	1 17 10
„ Admiralty prices { American, „	—	—
„ { Deptford, „	—	—
Pork, salted—From all countries, „	1 13 6	1 12 .2
„ Admiralty prices, „	—	—
Butter—From all countries, „	5 1 4	4 16 3
Cheese—From all countries, „	2 11 10	2 4 4
Potatoes—From all countries, „	0 6 8	0 6 3
Eggs—From all countries, per 120	0 7 0	0 7 0
Lard—From all countries, per cwt.	3 3 10	1 16 10
Milk—Bethlehem Hospital prices, per gallon	—	—

TABLE NO. 12.—RETURN OF THE AVERAGE PRICES OF WOOL IN THE YEARS 1884 AND 1885.

Years.	Australian.	South African.	English Fleeces.
	Per lb.	Per lb.	Per lb.
	s. d.	s. d.	s. d.
1884	1 0½	1 1½	0 8½ to 1 1½
1885	0 10½	0 9½	0 8½ „ 1 0½

AVERAGE PRICES (PER IMPERIAL QUARTER) OF HOME-GROWN WHEAT, BARLEY, AND OATS IN THE WEEKLY MARKET OF EDINBURGH, FOR THE YEARS 1885 AND 1886.

Weekly Market day, Wednesday.	WHEAT.		BARLEY.		OATS.		Weekly Market day, Wednesday.	WHEAT.		BARLEY.		OATS.	
	1885.	1886.	1885.	1886.	1885.	1886.		1885.	1886.	1885.	1886.	1885.	1886.
January	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	July	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
	29 8	29 10	29 5	26 6	22 4	22 3		33 2	30 6	23 6	27 4	24 10	24 10
	28 3	28 11	31 1	26 4	22 3	22 3		32 10	29 11	24 0	26 7	23 6	23 6
	29 1	31 0	30 9	26 6	21 0	22 8		30 6	31 3	30 0	27 0	23 7	23 7
	31 5	28 11	30 10	25 11	22 2	21 11		34 2	32 6	26 11	23 5	23 5	23 5
February	28 8	29 4	31 1	23 4	23 0	22 1	August	33 8	32 6	23 0	26 7	23 9	23 9
	29 6	28 4	31 4	24 0	23 7	22 4		34 6	34 0	26 6	24 1	24 1	24 1
	26 0	27 5	30 9	25 3	22 10	23 3		31 10	32 3	26 9	25 0	25 0	25 0
	29 3	29 9	34 7	22 11	22 7	22 7		31 0	32 7	26 1	25 2	25 2	25 2
	23 10	28 3	32 1	24 6	24 1	23 1		32 0	33 0	25 1	25 11	25 0	25 0
March	31 0	29 5	32 1	24 6	24 0	23 6	September	32 0	30 4	25 1	25 11	25 0	25 0
	30 0	29 1	31 7	25 1	24 5	24 0		31 3	31 11	23 9	23 8	24 10	24 10
	30 6	29 3	32 0	24 9	24 4	24 9		31 9	31 8	23 9	23 8	24 10	24 10
	29 4	29 4	24 2	23 10	23 10	23 10		30 9	33 6	23 9	23 5	23 9	23 9
	32 6	29 5	33 4	23 2	23 1	24 6		32 5	32 5	27 6	28 5	22 2	22 6
April	31 2	31 0	32 9	24 4	24 1	24 11	October	32 6	28 11	28 11	28 0	23 11	23 6
	38 9	31 3	35 1	24 0	27 3	25 1		32 2	31 1	26 7	28 0	23 6	23 6
	38 0	30 7	32 2	24 7	26 10	24 7		32 2	31 1	26 7	28 0	23 6	23 6
	30 0	30 0	33 0	27 3	27 3	25 4		29 5	33 6	27 5	26 2	23 3	23 2
	31 0	31 0	35 3	25 6	27 7	25 4		30 8	29 7	26 10	26 11	22 9	21 0
May	32 7	31 8	32 1	23 5	25 11	24 1	November	30 8	29 7	26 10	26 11	22 9	21 0
	32 2	32 6	29 11	23 11	25 9	24 5		31 2	28 4	27 5	22 9	21 4	21 4
	32 9	31 0	28 6	24 4	26 7	23 8		31 2	28 4	27 5	22 9	21 4	21 4
	33 11	30 6	23 1	26 5	25 1	24 11		29 2	30 3	27 1	24 7	22 7	20 6
	32 2	27 4	28 0	23 8	27 1	24 11		29 7	34 0	25 10	26 11	22 1	20 2
June	29 0	29 2	32 0	21 9	27 0	23 1	December	32 2	34 0	26 4	22 3	21 7	20 3
	33 4	29 2	29 5	23 6	28 0	23 1		27 8	35 0	25 11	23 2	21 1	20 4
	33 4	29 2	29 5	23 6	28 0	23 1		28 0	28 10	25 4	25 8	22 3	20 9
	33 4	29 2	29 5	23 6	28 0	23 1		28 0	28 10	25 4	25 8	22 3	20 9
	33 4	29 2	29 5	23 6	28 0	23 1		28 0	28 10	25 4	25 8	22 3	20 9

PRICES OF SHEEP AND WOOL SINCE THE COMMENCEMENT OF THE INVER-
NESS MARKET IN 1818. TABLE NO. 1.—CHEVIOT SHEEP.

Year.	Wether.		Ewes.		Lambs.	
	2s Od to	30s Od	not quoted.		8s Od to	10s Od
1818	2s Od to	30s Od	15s Od to	17s Od	10s Od to	12s Od
1819	2s 0 " "	27 0	16 0 " "	17 0	10 0 " "	11 0
1820	20 0 " "	25 0	14 0 " "	16 0	7 6 " "	8 0
1821	18 0 " "	20 0	8 0 " "	8 6	4 6 " "	0 0
1822	12 6 " "	13 0	7 0 " "	10 6	5 6 " "	6 0
1823	13 6 " "	18 0	7 0 " "	9 0	4 6 " "	6 0
1824	14 0 " "	19 0	15 0 " "	19 0	9 0 " "	10 6
1825	29 0 " "	32 0	13 0 " "	15 0	7 0 " "	8 0
1826	17 6 " "	21 6	not quoted.		7 0 " "	8 0
1827	15 0 " "	24 0	12 0 to	15 0	7 0 " "	8 3
1828	18 0 " "	27 6	12 6 " "	14 0	7 0 " "	8 6
1829	18 0 " "	24 0	8 0 " "	11 0	6 0 " "	6 9
1830	15 0 " "	21 0	9 0 " "	13 0	7 0 " "	8 0
1831	18 0 " "	25 0	11 0 " "	16 0	8 0 " "	11 3
1832	19 0 " "	24 0	13 6 " "	20 0	9 0 " "	11 6
1833	22 0 " "	31 0	13 6 " "	21 0	18 0 " "	11 0
1834	22 0 " "	31 0	18 0 " "	20 6	10 0 " "	14 0
1835	22 0 " "	27 6	16 0 " "	19 0	10 0 " "	13 0
1836	24 0 " "	31 6	14 0 " "	19 0	12 0 " "	14 0
1837	19 0 " "	28 0	17 0 " "	22 0	0 0 " "	13 0
1838	23 0 " "	30 6	14 0 " "	19 0	7 0 " "	11 6
1839	23 0 " "	31 0	15 0 " "	23 0	8 0 " "	12 0
1840	24 0 " "	33 0	13 0 " "	17 0	5 0 " "	8 0
1841	23 0 " "	30 0	10 0 " "	16 0	8 0 " "	10 6
1842	22 6 " "	28 0	13 0 " "	20 0	10 6 " "	14 6
1843	19 0 " "	25 0	14 6 " "	21 6	11 6 " "	15 0
1844	21 0 " "	59 0	13 0 " "	24 0	11 6 " "	15 0
1845	23 0 " "	33 0	12 0 " "	21 0	0 0 " "	14 0
1846	24 0 " "	33 6	12 0 " "	20 0	8 0 " "	13 0
1847	24 0 " "	35 0	13 0 " "	21 0	8 9 " "	14 0
1848	23 0 " "	34 6	15 0 " "	23 0	8 0 " "	14 0
1849	21 0 " "	30 2	17 0 " "	26 0	9 0 " "	17 0
1850	20 6 " "	29 6	17 0 " "	26 0	9 0 " "	16 6
1851	21 6 " "	31 0	16 0 " "	25 0	10 0 " "	17 0
1852	21 0 " "	32 0	15 6 " "	24 0	10 0 " "	15 0
1853	26 6 " "	38 0	14 6 " "	26 0	10 6 " "	14 6
1854	25 0 " "	36 0	14 0 " "	24 6	10 6 " "	14 0
1855	23 6 " "	36 0	16 0 " "	25 0	10 3 " "	14 9
1856	22 0 " "	35 6	17 6 " "	27 6	12 6 " "	17 6
1857	24 0 " "	36 0	16 0 " "	28 0	9 0 " "	16 0
1858	24 0 " "	34 6	17 6 " "	28 0	10 0 " "	16 0
1859	25 0 " "	34 6	19 0 " "	28 6	10 6 " "	16 0
1860	26 0 " "	38 0	21 0 " "	31 6	14 0 " "	18 0
1861	25 0 " "	38 6	22 6 " "	33 6	14 6 " "	20 0
1862	27 0 " "	37 6	29 0 " "	42 6	15 0 " "	26 0
1863	25 0 " "	38 6	18 0 " "	25 6	12 0 " "	16 0
1864	31 0 " "	41 0	15 6 " "	21 0	7 6 " "	13 0
1865	32 6 " "	44 0	15 0 " "	22 6	7 6 " "	14 0
1866	37 0 " "	50 0	18 0 " "	28 0	10 0 " "	17 0
1867	26 0 " "	58 0	15 0 " "	22 6	10 0 " "	17 0
1868	30 0 " "	32 0	18 0 " "	28 0	14 0 " "	18 0
1869	28 0 " "	38 0	22 0 " "	33 6	14 6 " "	20 0
1870	35 6 " "	43 0	29 0 " "	42 6	15 0 " "	26 0
1871	36 6 " "	49 0	18 0 " "	25 6	12 0 " "	16 0
1872	45 0 " "	56 0	15 0 " "	22 6	7 6 " "	14 0
1873	42 0 " "	51 0	18 0 " "	28 0	10 0 " "	17 0
1874	33 6 " "	44 6	32 0 " "	43 0	16 0 " "	22 0
1875	33 0 " "	48 6	25 0 " "	42 0	15 6 " "	22 0
1876	40 0 " "	52 6	21 0 " "	36 0	12 0 " "	17 0
1877	41 0 " "	51 0	21 0 " "	34 0	13 6 " "	23 6
1878	35 6 " "	48 0	23 0 " "	30 0	13 6 " "	25 0
1879	34 0 " "	44 0	25 0 " "	37 0	15 0 " "	24 0
1880	30 0 " "	43 6	23 6 " "	35 0	14 0 " "	22 0
1881	32 0 " "	45 6	21 0 " "	34 0	14 0 " "	20 0
1882	40 0 " "	51 0	20 0 " "	30 0	12 6 " "	20 0
1883	41 0 " "	55 6	29 0 " "	34 0	14 0 " "	20 0
1884	36 0 " "	47 6	30 0 " "	40 0	14 0 " "	20 6
1885	30 0 " "	38 0	34 6 " "	46 6	15 6 " "	23 0
1886	32 0 " "	40 0	29 6 " "	41 6	12 6 " "	20 0
			24 0 " "	31 0	12 0 " "	18 0
			21 0 " "	29 0	12 6 " "	19 0

TABLE No. 2.—BLACKFACED SHEEP.

Year.	Wethers.		Ewes.		Lambs.	
	Od	to	Od	to	Od	to
1819	22	0	12	0	8	0
1820	20	0	15	6	7	0
1821	18	0	12	0	6	0
1822	11	6	5	6	4	6
1823	12	0	5	0	4	0
1824	9	6	6	0	4	0
1825	22	0	11	0	6	0
1826	15	0	8	0	4	6
1827	14	0	7	0	6	0
1828	15	0	8	0	5	0
1829	14	0	9	0	6	0
1830	9	6	4	0	4	6
1831	13	0	5	0	5	0
1832	14	0	7	0	6	0
1833	16	0	7	6	6	6
1834	16	0	10	0	6	0
1835	15	0	10	0	7	0
1836	15	0	9	0	8	6
1837	13	0	8	0	8	0
1838	15	0	10	0	not quoted.	
1839	15	0	10	0	7	0
1840	15	0	11	0	7	0
1841	16	0	9	0	6	0
1842	14	0	7	6	5	6
1843	not quoted.		4	9	not quoted.	
1844	15	0	6	6	5	0
1845	14	0	8	0	6	0
1846	13	0	10	0	8	0
1847	20	6	10	0	8	6
1848	20	0	11	3	8	6
1849	not quoted.		not quoted.		7	0
1850					7	0
1851	17	6	9	0	6	6
1852	18	6	9	6	4	6
1853	23	0	14	6	8	0
1854	20	0	11	0	8	0
1855	23	6	14	0	10	0
1856	17	0	10	0	7	6
1857	20	0	10	6	9	3
1858	20	0	9	9	8	3
1859	20	0	10	0	3	9
1860	21	0	11	0	10	0
1861	21	0	12	0	6	3
1862	16	9	12	0	6	0
1863	20	0	13	0	8	0
1864	25	0	15	0	10	0
1865	15	6	15	0	10	0
1866	31	6	20	0	13	6
1867	20	0	14	0	7	6
1868	20	0	10	6	7	0
1869	22	0	11	0	6	9
1870	27	0	13	0	8	0
1871	23	0	13	0	11	0
1872	31	6	18	0	12	6
1873	28	0	16	6	7	0
1874	25	0	13	0	7	0
1875	26	6	15	0	9	6
1876	30	0	19	0	13	0
1877	35	0	18	0	13	6
1878	30	0	17	0	12	0
1879	25	0	16	0	10	6
1880	25	0	16	6	10	0
1881	30	0	15	0	10	0
1882	33	0	20	0	12	6
1883	36	0	24	6	14	0
1884	29	0	19	6	12	0
1885	24	0	13	0	10	0
1886	25	0	12	0	10	6

ANNUAL REPORT REGARDING EXPERIMENTAL STATIONS AND ANALYTICAL ASSOCIATIONS.

Read at the General Meeting in January 1887, by DR AITKEN,
Chemist to the Society.

Experimental Stations.—The experiments at the stations last year had a twofold object in view—first, to find what was the amount of residual fertility or unexhausted value remaining in the soil from the manures used in former years; and, second, to try the effects of various manures upon the potato crop. Accordingly, at the Pumpherston station, a crop of turnips has been grown entirely without manure, and at the Harelaw station a crop of potatoes has been grown partly with, and partly without, manure. These experiments will be continued during the present season, when the station at Pumpherston will be sown out with barley, and that at Harelaw with a cereal crop.

Subsidiary experiments have also been tried at Pumpherston to test the relative efficacy of different kinds of phosphates when ground to different degrees of fineness. Among these phosphates is a substance called basic slag, which is a waste product obtained in the dephosphorising of steel by the Thomas process, and of which large quantities have been accumulating in the country during recent years. It is supplied at a low price in very finely ground condition, and the results obtained from it, when applied to the turnip crop, show that it is a manure worthy of the attention of farmers. Other experiments of a similar nature have been kindly undertaken by members of the Society in different districts, and these, along with experiments to test the manurial value of sulphate of iron on the turnip crop of ground and dissolved leather-waste as a source of nitrogen, and of ground felspar as a source of potash, will be found at p. 245 of this volume of the Society's *Transactions*.

Analytical Associations.—The number of associations that have applied for the Society's grant is 17—the same as last year. The number of analyses for which grants are claimed is 290, including 25 belonging to the former season. The analyses proper to the year 1886 amount to 265 as against 280 in 1885. From this total of 265 have to be deducted 26 analyses which are disqualified from obtaining a grant on the ground that their guarantees were insufficient, and also 38 reports of analyses received too late to be included in this year's grant. These will be included in the grant for next year; but, owing to the difficulty and inconvenience attending the investigation of reports sent in later than the date prescribed in the regulations, viz., 1st November, it has been resolved that henceforth no reports shall be received unless they are sent in on or before that

date each year. There thus remain 226 analyses, for which the Society will now give its grant, amounting in all to £96. The analyses disqualified for the want of a sufficient guarantee refer chiefly to feeding cakes purchased under the guarantee that they were "pure" or "genuine." It has already been sufficiently pointed out that such guarantees are of very little value, and that they do not protect the buyer against considerable loss in the purchase of feeding cakes, which, though selling at the same price, are frequently found to vary as much as 25 per cent. in their feeding value. The Society cannot recognise analyses of materials bought in that way, for the analysis forms no check upon the guarantee. The only guarantee recognised by the Society is an analytical one, whose items can be compared with those of the analysis made for the association. According to the regulations affecting Local Analytical Associations, it is required that the Society should be able to discover whether the material bought is deficient from its guarantee to the extent of one-tenth of its valuable constituents; but it is clearly impossible to do that unless an analytical guarantee accompanies the purchase. Even analytical guarantees are not always satisfactory, as they are not infrequently expressed in terms that are somewhat indefinite or even misleading. Accordingly it has been resolved that henceforth the associations shall be supplied by the Society with printed forms denoting in unmistakable terms what are the ingredients of a manure or feeding stuff requiring to be guaranteed. Each analysis for which an association claims a grant must be accompanied by one of these forms in which the seller has noted the minimum percentage of each ingredient guaranteed, and to which he has appended his signature. By means of this arrangement the Chemical Committee hope to remove one of the chief sources of trouble to themselves and of misunderstanding between buyers and sellers.

Out of the 226 analyses included in the grant this year, twenty-six were found to be deficient to the extent of fully one-tenth of the amount of the valuable constituents guaranteed. The Chemical Committee have carefully inquired into the circumstances of each case, with the result that already nineteen have been dismissed, as the discrepancies have been found to be due to other causes than deficiencies in the stuffs purchased, or have been otherwise satisfactorily explained. There now remain only seven, which are still under investigation, and it is probable that that number may yet be reduced.

The scheme of unit values, based on the market prices of manures for the present season, has now been adjusted, and may be had on application to the Secretary.

APPENDIX (A).

PROCEEDINGS AT BOARD MEETINGS.

MEETING OF DIRECTORS, 3RD FEBRUARY 1886.

Present.—Sir David Baird of Newbyth, Bart.; Sir James H. Gibson-Craig of Riccarton, Bart.; Mr Balingall, Dunbog; Mr Cran, Kirkton; Mr Dudgeon, yr. of Cargen; Mr Dudgeon, Easter Dalmeny; Mr Scott Dudgeon, Longnewton; Mr Elliot, yr. of Wolfelee; Mr Elliot, Holybush; Mr Fisher, Jellyholm; Mr Forbes of Culloden; Rev. John Gillespie, Mouswald; Colonel Gillon of Wallhouse; Mr Hope, East Barns; Mr Howatson of Glenbuck; Mr Irvine of Drum; Mr Kerr, Ferrygate; Mr Lumsden of Balmedie; Mr Mackenzie of Portmore; Mr John Ord Mackenzie of Dolphinton; Mr Matthews, Whitehills; Mr Maxwell, yr. of Munches; Mr Milne, Inverurie; Mr Murdoch, Gartaraig; Mr Paterson of Birthwood; Mr Paterson, Plean Farm; Mr Conal Rowan of Meiklewood; Mr Shaw, Skaithmuir; Mr Villiers, Closeburn Hall; Mr Wilson, Markle; Mr Young of Cleish Castle; Dr Aitken; Dr Cleghorn; and Mr W. Home Cook, C.A. Sir James H. Gibson-Craig, and afterwards Mr Scott Dudgeon, in the chair.

Mr. F. N. MENZIES reported apologies for the absence of Sir Robert Menzies, Bart.; Sir Alexander Jardine, Bart.; Mr Hewetson, Auchenclozie; Mr Mackenzie, yr. of Kintail; Mr M'Queen of Crofts; Mr Maxwell of Munches, Mr Murray, Catter House; and Mr Walker of Bowland, C.B.

A letter was read from the Earl of Strathmore thanking the members of the Society for the terms in which his services as President of the Society are referred to in the resolution passed at the last general meeting, and expressing his deep sense of the honour and courtesy which he had experienced from them during the year when he had the honour to be President.

AGRICULTURAL PRODUCE STATISTICS.—Copies of the tables showing the extent in statute acres and the estimated average produce per acre of the principal crops in Great Britain for the year 1885, prepared and presented to the Society by the Agricultural Department, Privy Council Office, were submitted.

CLEVELAND BAY HORSE SOCIETY.—Volume II. of the "Cleveland Bay Stud-Book," containing pedigrees of stallions foaled from 1st January 1880 to 1st January 1885, and of mares and their produce, presented to the Society's library by the Cleveland Bay Horse Society of Great Britain and Ireland, was submitted, and accepted with thanks.

HUNTERS' IMPROVEMENT SOCIETY.—A circular from Mr E. Somerville Tattersall, Albert Gate, Hyde Park, London, honorary secretary of the Hunters' Improvement Society, soliciting the co-operation and assistance of the Highland Society, was laid before the meeting, and subscription papers were circulated among the members present.

DUMFRIES SHOW, 1886.—Mr Maxwell of Munches, one of the Vice-Presidents of the Society, was unanimously appointed convener of the Local Committee on the Dumfries Show.

ADMISSION OF REPORTERS TO BOARD MEETINGS.—On the motion of Mr Maxwell, yr. of Munches, seconded by Mr Paterson of Birthwood, it was resolved that reporters be admitted to the meetings of the Board; and it was remitted to a committee to draw up regulations for their admission, and report to next meeting on the 3rd of March.

MEETING OF DIRECTORS, 3RD MARCH 1886.

Present.—Sir Robert Menzies of Menzies, Bart.; Sir James H. Gibson-Craig of Riccarton, Bart.; Sir William Walker of Bowland, K.C.B.; Mr Balingall, Dunbog; Mr Cran, Kirkton; Mr Dudgeon, East Dalmeny; Mr Elliot, yr. of Wolfelee; Mr Elliot, Holybush; Mr Fisher, Jellyholm; Rev. John Gillespie, Mouswald; Colonel Gillon of Wallhouse; Colonel Hare of Calder Hall; Mr Hewetson, Auchenclozie; Mr Howatson of Glenbuck; Mr Irvine of Drum; Mr Kerr, Ferrygate; Mr Lumsden of Balmedie; Mr Mackenzie of Portmore; Mr Mackenzie, yr. of Kintail; Mr Marr, Cairnbrogie; Mr Martin of Auchendennan; Mr Matthews, Whitehills; Mr Maxwell of Munches; Mr Maxwell, yr. of Munches; Mr Middleton, Clay of Allan; Mr Paterson, Plean Farm; Mr Connal Rowan of Meiklewood; Mr Villiers, Closeburn

Hall; Mr Walker, Portlethen; Mr Young of Cleish Castle; Dr Aitken; and Dr Cleghorn of Strivithy. Mr Maxwell of Munches, Vice-President, in the chair.

Mr F. N. MENZIES reported apologies for the absence of Mr Farquharson of Haughton; Mr Forbes of Culloden; Mr Hope, East Barns; Mr Macalpine Leny of Dalswinton; Mr Murdoch, Gartcraig; Mr Murray, Catler House; Mr Shaw, Skaithe-muir; and Mr W. Home Cook, C.A.

REPORTERS AT BOARD MEETINGS.—On the motion of Mr Mackenzie of Portmore, seconded by Mr Walker, Portlethen, the following resolution was unanimously agreed to:—"That the resolution arrived at last month in regard to the admission of reporters be rescinded, and the subject of the manner in which the reports of the meetings of this Board shall in future be framed be referred to a committee to consider and report." The following committee was named:—Sir James Gibson-Craig, Bart., convener; Mr Maxwell, yr. of Munches; Mr Paterson of Birthwood; Mr Shaw, Skaithe-muir; Mr Hope, East Barns; Mr Forbes of Culloden; Mr Mackenzie, yr. of Kintail; Rev. John Gillespie, Mouswald; Mr Martin of Auchendennan.

AGRICULTURAL EDUCATION.—At a meeting of the Council on the 2nd inst., it was resolved, on the motion of Professor Turner, seconded by Professor Dickson, "That the Board of Examiners for the diploma and certificates granted by the Society shall consist of not less than two examiners on each subject of examination."

AGRICULTURAL AND FORESTRY EXAMINATIONS.—It was intimated that the examinations for the Society's agricultural certificates and diploma and for the certificates in forestry had been fixed for the 29th, 30th, and 31st current, candidates being required to lodge intimation on or before the 16th.

BURSARIES.—On the motion of Mr Elliot, yr. of Wolfelee, seconded by Sir Robert Menzies, the following resolution was agreed to:—"That applicants for bursaries must be qualified by birth or residence in Scotland, and the Council on Education are entitled to consider each case on its merits—their decision to be final."

CHEMICAL DEPARTMENT.—The Committee on the Chemical Department reported that they had under consideration the experiments at Pumphreston station, and thought the station should be cropped during the next two years till the natural expiry of the lease, for the special purpose of ascertaining the value of what manures remain unexhausted in the different plots. The committee further recommend that the plots which have been fully manured since the experiments began be cropped without further addition of manure, and that those plots which have received incomplete manures should now receive such manurial treatment as will enable the residual value of the manure hitherto applied to be estimated. The report on the deficient manures and feeding stuffs supplied to the associations during the past year was considered, and the few cases of deficiency that had occurred were explained satisfactorily, or were of such a trivial kind as not to require the Society to publish any details regarding them.

ABORTION IN COWS.—A letter from Mr Bruce, Broadlands, Huntly, stating that abortion in cows is very prevalent in his district, and suggesting that the Society should take up the subject, and cause inquiries to be made, so as to ascertain the cause of the disease, and perhaps find a remedy, was referred to the Society's Veterinary Committee, with the addition of Mr Walker, Portlethen, and Mr Cran, Kirkton.

DUMFRIES SHOW.—A letter was read from Mr Maxwell of Munches, agreeing to act as convener of the local committee, and assuring the Board that he would do all he could to promote the success of the meeting. A letter was read from Mr M^r Queen of Crofts, calling attention to the want of another footbridge at Dumfries Station. At the request of the meeting, the chairman (Mr Maxwell of Munches) undertook to communicate with the railway company on the subject.

PRESENTATION OF BOOKS.—Volume X. of the Polled Herd-Book, and Volume VIII. of the Clydesdale Stud-Book, presented to the Society's library, were submitted, and accepted with thanks.

MEETING OF DIRECTORS, 7TH APRIL 1886.

Present.—Hon. R. Baillie Hamilton of Langton; Sir Robert Menzies of Menzies, Bart.; Sir James H. Gibson Craig of Riccarton, Bart.; Sir William S. Walker of Bowland, K.C.B.; M. Allan, Munnoch; Dr Cleghorn of Stravithy; Mr Cran, Kirkton; Mr Dudgeon, yr. of Cargen; Mr Scott Dudgeon, Longnewton; Mr Easson, Scoones Lethendy; Mr Elliot, yr. of Wolfelee; Mr Elliot, Holybush; Mr Fisher, Jellyholm; Mr Forbes of Culloden; Rev. John Gillespie, Mouswald; Colonel Hare of Calder Hall; Mr Hewatson, Auchendennan; Mr Hope, East Barns; Mr Howatson of Glenbuck; Mr Kerr, Ferrygate; Mr Lennox, Provost of Dumfries; Mr Macalpine Leny of Dalswinton;

Mr Mackenzie, yr. of Kintail; Mr M'Queen of Crofts; Mr Martin of Auchendennan; Mr Matthews, Whitehills; Mr Maxwell of Munches; Mr Maxwell, yr. of Munches; Mr Middleton, Clay of Allan; Mr Murdoch, Garteraig; Mr Murray, Catter House; Mr Paterson of Birthwood, Mr Paterson, Plean Farm; Mr Connal Rowan of Meiklewood; Mr Wardlaw Ramsay of Whitehill; Mr Shaw, Skatthmuir; Mr Wilson, Markle; Mr Young of Oleish Castle; Dr Aitken; and Mr W. H. Cook, C.A. Mr Wellwood H. Maxwell of Munches, Vice-President, in the chair.

Apologies for absence were reported from Mr Drew of Craigenallie, Mr Dudgeon, Easter Dalmeny; Mr Farquharson of Haughton, Colonel Gillon of Wallhouse, Mr Irvine of Drum, Mr Mackenzie of Portmore, and Mr Villiers, Closeburn Hall.

VETERINARY EXAMINATIONS.—On an application from General Sir Frederick Fitzwygram, Bart., M.P., the Board granted permission to hold the examination for his veterinary prizes in the Society's Hall, on Tuesday the 11th of May.

DUMFRIES SHOW—Footbridge at Railway Station.—The CHAIRMAN reported that, as requested at last Board meeting, he had communicated with the Glasgow and South-Western Railway on the want of another footbridge at Dumfries Station, and he read the following letter he had received on the subject:—

"Glasgow and South-Western Railway,
"Secretary's Office, Glasgow, 6th April 1886.

"Dear Sir,—The subject of the position of the footbridge at Dumfries Station was before my directors to-day. They had previously authorised the removal of the bridge to the south end of the station, subject to a satisfactory report being got from the officers of the company. This report has now been received, and the directors have approved of the bridge being moved to a site close to the passenger-station buildings and the end of the passenger dock. This probably will shorten the dock a little, but will, I think, otherwise be an improvement.—I am, yours truly,
(Signed) "JOHN MORTON, Secretary.

"W. H. Maxwell, Esq. of Munches."

DISTRICT COMMITTEE.—Letters to the conveners of the counties connected with the Show,—Dumfriesshire, the Stewartry of Kirkcudbright, and Wigtonshire—and to the Provost of Dumfries, in reference to the nomination of the district committee, were agreed to.

REFRESHMENT-ROOMS AND HOTEL ACCOMMODATION.—The applications for supplying refreshments in the yard were referred to a committee of Directors in the district, namely, Mr Maxwell, yr. of Munches; Rev. John Gillespie; Mr Hewetson, Auchencubbinzie; Mr Macalpine Leny of Dalswinton, Mr M'Queen of Crofts, and Provost Lennox; and the arrangements as to the hotel accommodation were referred to the same committee.

PRIZE COLOURS AT SHOWS.—With the view of establishing a uniform code of colours to decorate the prize animals at all shows in the United Kingdom, it was agreed to adopt the colours used by the Royal Agricultural Society of England.

PERTH SHOW.—The Board approved of letters being addressed to the conveners of the counties connected with the Show—Eastern Division of Perthshire, Western Division of Forfarshire, Fifeshire, and Kinross-shire—with reference to the auxiliary subscription.

AGRICULTURAL EDUCATION.—The annual examination of candidates for the Society's diploma and certificates in agriculture, and certificates in forestry, was held in the Society's Chambers, Edinburgh, on the 31st March and two previous days. The number of candidates who presented themselves was 23, namely, 19 in the agricultural and 3 in the forestry department. The examinations resulted in 6 passing for the diploma, 10 for the first and 2 for the second class certificates in agriculture; and 2 for the first and 1 for the second class certificates in forestry.

TRIAL OF IMPLEMENTS.—The SECRETARY reported that the inspection of the land on the farm of Middlefield, near Aberdeen, cultivated last autumn by the implements entered for competition for the premiums offered at the Aberdeen Show would take place on Friday the 7th of May, and that the trial of the implements entered for the spring cultivation of land would be held on Saturday 8th May, on a field close to Easlemont Station on the Buchan and Formartine Railway, kindly granted by Mr Milne.

TESTIMONIAL TO MR ROBERT M'KEAN.—A circular from Messrs Inglis Todd, Glasgow, in regard to a proposed testimonial to Mr Robert M'Kean, Lumloch, was reported, and subscription cards were submitted.

RAILWAY AND CANAL TRAFFIC BILL.—The Board resolved to petition in favour of the Bill introduced by the Right, Hon. A. J. Mundella, President of the Board of Trade, subject to some necessary modifications, as proposed by the Railway and Canal Traders' Association.

MEETING OF DIRECTORS, 5TH MAY 1886.

Present.—Hon. R. Baillie Hamilton of Langton; Sir Robert Menzies of Menzies, Bart.; Sir G. Graham Montgomery of Stanhope, Bart.; Sir David Baird of Newbyth, Bart.; Sir James H. Gibson-Craig of Riccarton, Bart.; Mr Ballingall, Dunbog; Mr Cran, Kirkton; Mr Drew of Craigenhallie, Mr Dudgeon, yr. of Cargen; Mr Dudgeon, Easter Dalmeny; Mr Scott Dudgeon, Longnewton; Mr Elliot, yr. of Wolfelee; Mr Elliot, Holybush; Mr Fisher, Jellyholm; Rev. John Gillespie, Mouswald; Colonel Gillon of Wallhouse; Colonel Hare of Calder Hall; Mr Hewetson, Auchenhainzie; Mr Hope, East Barns; Mr Howatson of Glenbuck; Mr Kerr, Ferrygate; Mr Macalpine Leny of Dalswinton; Mr Lumsden of Balmedie; Mr Mackenzie, yr. of Kintail; Mr M'Queen of Crofts; Mr Martin of Auchendennan; Mr Matthews, Whitehills; Mr Maxwell of Munches; Mr Maxwell, yr. of Munches; Mr Middleton, Clay of Allan; Mr Murdoch, Garterraig; Mr Murray, Catter House; Mr Paterson of Birthwood; Mr Connal Rowan of Meiklewood; Mr Shaw, Skaithmuir; Mr Villiers, Closeburn Hall; Mr Wilson, Sunnyside; Mr Young of Cleish Castle; Dr Aitken; Mr W. Home Cook, C.A.; Mr M'Alpine, and Mr Park. Mr Wellwood H. Maxwell of Munches, Vice-President, in the chair.

Mr F. N. MENZIES reported apologies for the absence of Sir William S. Walker of Bowland, K.C.B.; Mr Forbes of Culloden, and Mr Walker, Portlethen.

REPORTS OF BOARD MEETINGS.—The resolution of the Board of 3rd March, rescinding the resolution of 3rd February to admit public reporters, was confirmed by 26 to 9. It was agreed that a private reporter should be engaged to take a verbatim report of the Board meetings, and it was remitted to a committee to investigate how this is to be carried out, and report to next meeting.

GENERAL MEETING.—The yearly general meeting of the Society for the election of members, and for other business, was fixed to be held on the 16th of June, being the third Wednesday of the month, and the usual day for holding the meeting.

DUMFRIES SHOW.—Mr F. N. MENZIES stated that he would attend at Dumfries to take entries and arrange committees on Wednesday, the 19th day of May. The following were appointed to act as stewards:—The Rev. John Gillespie, Mouswald, for horses; Mr Mackenzie, yr. of Kintail, for cattle; Mr Walker, Portlethen, for sheep, swine, &c.; Mr Maxwell, yr. of Munches, for forage; Mr Scott Dudgeon, Longnewton, and Mr Shaw, Skaithmuir, for implements. It was remitted to the Committee on General Shows to suggest a list of judges along with letters from Sir George Macpherson Grant and Mr Dawson on the system of judging adopted last year at Aberdeen. Mr M'Queen and Mr F. N. Menzies, the Secretary, were appointed to take charge of the working dairy. The headquarters of the Society to be the King's Arms Hotel. The following purveyors were approved of:—Mr Sibbald, Maxwell Arms Hotel, Dalbeattie; Mr Gerrand, Grapes Hotel, Whithorn; Mr Hart, Castle Street, Dumfries; Mrs Johnstone, Fountain Café, Dumfries (temperance booth). Mr Maxwell of Munches was requested to apply again to the Glasgow and South-Western Railway Company to endeavour to get them to put up a second footbridge at the station.

PERTH SHOW, 1887.—A letter was read from Mr MacLeish, town-clerk, Perth, intimating that the Town Council of Perth had unanimously agreed to allow the Society the use of the western division of the South Inch for their Show next summer, and that it had been remitted to the Magistrates with full powers to arrange the terms and any other particulars in connection with the grant, and also to make all necessary arrangements in connection with the Show.

PROPOSED SHOW AT DUNDEE.—A letter was read from Provost Ballingall begging, on behalf of the Corporation of Dundee, to renew their application to have Dundee put upon the list of towns visited in rotation by the annual Show of the Society. Consideration of the subject was postponed.

DISTRICT SHOWS.—It was referred to the District Show Committee to report on the working of the system of district grants.

TERM DAYS IN SCOTLAND.—It was remitted to a special committee, consisting of Mr Paterson of Birthwood, Mr Maxwell, yr. of Munches, and Mr Murray, Catter House, with powers to communicate with the Lord Advocate, and if necessary to frame a petition against the Bill introduced by his Lordship fixing the term days in Scotland at 15th May and 11th November respectively.

BUTTER FRAUDS.—Letters were submitted from Mr Smith, of the Carse of Gowrie Dairy Company, Balruddery, Dundee, in regard to butterine, and referred to the Dairy Committee.

ABORTION IN COWS.—A report by the Veterinary Committee was read, stating that Dr Woodhead and Dr Aitken had undertaken the duty of investigating the subject of abortion in cows. Stock owners who are willing to aid in the investigation

by giving the results of their experience will be supplied with schedules for the purpose on application to the Secretary, 3 George IV. Bridge.

FISHING INVESTIGATION.—A letter from Mr W. Anderson Smith, Ledaig, in regard to a fishing investigation on the West Coast of Scotland was referred with power to the Society's Committee on Highland Industries and Fisheries.

PRESENTATION OF BOOKS.—A copy of the third edition of Strangeway's Veterinary Anatomy, presented by Messrs Bell & Bradfute, publishers, and a copy of the third volume of the Hackney Stud-Book, presented by the Hackney Stud-Book Society, were submitted, and accepted with thanks.

MEETING OF DIRECTORS, 2ND JUNE 1886.

Present.—Sir Robert Menzies of Menzies, Bart.; Sir James H. Gibson-Craig of Riccarton, Bart.; Mr Allan, Munnoch; Mr Ballingall, Dunbog; Mr Cran, Kirkton; Mr Dudgeon, yr. of Cargen; Mr Dudgeon, Easter Dalmeny; Mr Scott Dudgeon, Longnewton; Mr Easson, Scones Lethendy; Mr Elliot, yr. of Wolfalee; Mr Elliot, Holybush; Mr Hewetson, Auchenhainzie; Mr Howatson of Glenbuck; Mr Fisher, Jellyholm; Rev. John Gillespie, Mouswald; Mr Hope, East Barns; Mr Macalpine Leny of Dalswinton; Mr Mackenzie, yr. of Kintail; Mr M'Queen of Crofts; Mr Marr, Cairnbrogie; Mr Matthews, Whitehills; Mr Maxwell, yr. of Munches; Mr Milne, Inverurie; Mr Murdoch, Gartcaig; Mr Murray, Catter House; Mr Paterson of Birthwood; Mr Shaw, Skathmuir; Mr Walker, Portlethen; Mr Wilson, Sunny-side; Mr Young of Oleish Castle; Dr Aitken; Mr W. Home Cook, C.A.; and Mr Park. Sir James H. Gibson-Craig, Bart., Vice-President, in the chair.

Mr F. N. MENZIES reported apologies for the absence of Mr Drew, Craiggencallie; Mr Forbes of Culloden, Mr Irvine of Drum, Mr Lumsden of Balmedie, Mr Mackenzie of Portmore, Mr Martin of Auchendennan, Mr Paterson, Plean Farm; Mr Connal Rowan of Meiklewood, and Mr Villiers, Closeburn Hall.

AWARDS FOR IMPLEMENTS.—On the recommendation of the judges, the following premiums were awarded:—Autumn cultivators—1st prize, £13, to Thomas Corbett, Shrewsbury; 2nd prize, £10, to Thomas Corbett; 3rd prize, £5, to George Sellar and Son, Huntly. Spring cultivators—1st prize, £20, to Thomas Corbett; 2nd prize, £10, to Wm. Webster, Milbrey, Fyfe.

DUMFRIES SHOW, 1886.—*System of Judging.*—At a meeting of the Committee on General Shows, held on the 1st of June, it was agreed to recommend to the Board that the practice of judging previous to the Aberdeen Show be again adopted. The Board approved of the report.

Attending Members.—In addition to the two attending members named by the meeting at Dumfries, the Board appointed the following Directors:—Shorthorn, Sir James H. Gibson-Craig, Bart.; Ayrshire, Mr Matthews, Whitehills; Galloway, Mr Macalpine Leny of Dalswinton; Aberdeen-Angus, Mr Dudgeon, yr. of Cargen; Highland, Sir Robert Menzies, Bart.; stallions and colts, Mr Murray, Catter House; mares and fillies, Mr Allan, Munnoch; hunters and roadsters, Mr Villiers, Closeburn Hall; blackfaced, Mr Hope, East Barns; Cheviot, Mr Howatson of Glenbuck; border Leicester and other long-woolled sheep, Mr Hewetson, Auchenhainzie; Shropshire and other short-woolled sheep, Mr Lumsden of Balmedie; half-bred, Mr Elliot, yr. of Wolfalee; swine, Mr Marr, Cairnbrogie; poultry, Mr Ballingall, Dunbog; dairy produce, Mr Fisher, Jellyholm.

Railway Arrangements.—The following Committee on Railway Arrangements was appointed:—Mr Drew of Craiggencallie; Mr Maxwell, jun. of Munches; Mr M'Queen of Crofts; Mr Hewetson, Auchenhainzie; Mr Dudgeon, yr. of Cargen; and the Rev. John Gillespie, convener.

Late Entries.—The Secretary reported that in terms of the regulations a number of entries had been refused, not having been posted on or before the 29th, the day fixed by the Directors after which no entries were to be received.

HIGHLAND INDUSTRIES AND FISHERIES.—The committee on this department reported that they had had under consideration a letter from Mr Anderson Smith, Ledaig, stating that it had been arranged to explore the commercial marine resources of a considerable portion of the West Highland waters for the benefit of the community. At a meeting of the committee Mr Anderson Smith explained how the investigation was to be carried on, and that he was to take charge of the expedition and employ skilled fishermen, and local fishermen also, to take particular notice of the fish food in the various lochs. After fully considering the letter and explanation by Mr Smith, the committee were of opinion that the investigation will be productive of great benefit to the Western Highlands, and is well worthy of the support of the Society, and they agreed to Mr Smith carrying on the investigation under the auspices

of the Society and that a grant of £30 be given towards the expenses of the expedition, Mr Smith undertaking to write a special report of the results for the Society's *Transactions* of 1887. The Board approved of the report.

REPORTING BOARD MEETINGS—On a report by a special committee the Board agreed to employ a shorthand writer who would undertake to report the Society's meetings, giving a summary to be reviewed by the Secretary in time for the daily papers and write a verbatim report afterwards. Any paper ready to pay for telegraphed reports shall be provided with it.

TERMS OF REMOVAL (SCOTLAND) BILL—The following is the report of the committee appointed at the meeting of the Board in May to communicate with the Lord Advocate, and, if necessary to petition against the Bill—

"The committee having taken into consideration the Terms of Removal (Scotland) Bill, as introduced into Parliament by the Lord Advocate resolve to oppose it in its present form, although of opinion that it is highly desirable to establish uniform terms for all interests in Scotland. The Bill proposes that the 15th of May shall be the term of Whitsunday and the 11th day of November the term of Martinmas. The committee are satisfied that were removals from sheep farms made obligatory on or before the 15th of May, very serious losses would fall on all sheep farmers removing from or entering to a holding as at that date lambing on hill farms would not be more than two thirds completed and were the shepherds all over the country to leave service while this state of matters existed, and delivery of stocks to take place great destruction of property would ensue and thus the whole community would suffer. Further the committee have reason to believe that in the greater part of Scotland the 26th May and 22nd November are at present the customary days for entry to or removal from agricultural subjects and also the days of entry to or removal from service of all agricultural servants thus showing that these have been found to be the days most suited to the state of agricultural operations at that season of the year. It therefore appears to this committee that the 26th day of May should be declared to be the term of Whitsunday, and the 22nd day of November the term of Martinmas that on one or other of these days all entries to or removals from any farm house, dwelling house, or buildings let along with land for agricultural purposes should take place, and that these dates should be the days of entry to or removal from service of all agricultural servants in Scotland."

The Secretary was instructed to send this report to the Lord Advocate, respectfully requesting him to introduce such changes into the Bill as are herein indicated, and also to send a copy to all members of Parliament connected with Scotland.

DUNKELD LARCHES—A letter from Mr Pringle of Wilton Lodge, sending copy of a letter from Warren Hastings, written in 1810, anent the Dunkeld Larches, was referred to the Committee on Publications.

GALLOWAY HERD BOOK—A copy of Volume VI of the Galloway Herd Book, presented to the Society a library by the Galloway Cattle Society, was submitted, and accepted with thanks.

TRANSACTIONS—The Secretary laid on the Table Volume XVIII of Fourth Series of the Society's *Transactions*, and stated that the distribution of copies to members had commenced.

MEETING OF DIRECTORS, 16TH JUNE 1886

Present—Vice Presidents—Sir James H. Gibson Craig, Bart., and John Scott Dudgeon. Ordinary Directors—Duncan Forbes, James M. Queen, James Shaw, Wm. Wilson, James T. S. Elliot, Niven Matthews, Jonathan Middleton, Robert Paterson, Walter Elliot, P. F. Connal Rowan, John Ballingall, John Cran, John Milne. Extra ordinary Directors—James Drew, Robert F. Dudgeon, Alex. Dudgeon, Rev. John Gillespie. Honorary Secretary—Sir G. Graham Montgomery, Bart. Chemist—Dr. Arken. Auditor—Wm. Home Cook, C. A. Engineer—James D. Park. Chairman of Committee on General Shows—Colonel Gillon. Chairman of Committee on Publications—A. F. Irvine. Sir Jas. Gibson Craig in the chair.

The business had reference principally to the Dumfries Show and to the subjects to be brought before the general meeting of this date.

MEETING OF DIRECTORS, 3RD NOVEMBER 1886

Present—Vice Presidents—Sir James H. Gibson Craig, Bart. and John Scott Dudgeon. Ordinary Directors—James Park, James M. Queen, John T. S. Paterson, James Shaw, James T. S. Elliot, John Marr, Niven Matthews, James Murray, Robert Paterson, Harry Young, Alexander Murdoch, Walter Elliot, P. F. Connal Rowan,

Allan R. Mackenzie, John Kerr, Wm. J. Maxwell, John Ballingall, Donald Fisher, and John Milne. Extraordinary Directors—James Drew, R. F. Dudgeon, Charles Howatson, John M. Martin, Colin J. Mackenzie, Alexander Dudgeon, James Hope, the Rev. John Gillespie, F. E. Villiers, and Lieut.-Colonel Hare. Treasurer—Sir William S. Walker, K.C.B. Hon. Secretary—Sir G. Graham Montgomery. Chemist—Dr Andrew P. Aitken. Auditor—William Home Cook, C.A. Consulting Botanist—A. N. M'Alpine. Engineer—James D. Park. Chairman General Shows Committee—Col. Gillon. Sir James H. Gibson-Craig, and afterwards Mr Young, of Cleish, occupied the chair.

Mr F. N. MENZIES reported apologies for the absence of Sir Robert Menzies, Bart.; Mr Cran, Kirkton; Mr Forbes of Culloden; Mr Hewetson, Auchinbainzie; Mr Lumsden of Balmedie; Mr Middleton, Clay of Allan; and Mr Walker, Portlethen.

AWARDS FOR IMPLEMENTS.—On the recommendation of the judges, the following premiums were awarded:—Turnip-thinners—£15 to General Briggs, Strathairly, Largo. Sheaf-binding reapers—£55 to R. Hornsby & Sons, Grantham; £45 to W. A. Wood, Worship Street, London. Manure distributors—£15 to Ben. Reid & Co., Bon-Accord Works, Aberdeen.

NOMINATION OF DIRECTORS BY SHOW DISTRICTS.—A report by the Secretary was read, showing that the following members had been nominated and recommended to the Board to act as Ordinary Directors in terms of the regulations:—James Park, Dechmont, Cambuslang—Glasgow District; David Buttar, Corston, Coupar-Angus—Perth District; Colonel Stirling of Kippendavie, Dunblane—Stirling District; George R. Glendinning, Hatton Mains, Wilkieston—Edinburgh District; Sir John Innes of Edengight, Bart, Keith—Aberdeen District; Robert F. Dudgeon, yr. of Cargen, Woodhouselee, Canonbie—Dumfries District; Campbell Macpherson-Grant of Drumduan, Forbes—Inverness District; Lord Arthur Cecil, Orchard Mains, Innerleithen—Kelso District.

OFFICE-BEARERS AND DIRECTORS.—It was remitted to the following committee to prepare a list of Office-Bearers and Directors, and to submit it for consideration at the December meeting:—Mr Paterson of Birthwood; Mr Maxwell, yr. of Munches; Mr Murray, Catter; Mr Elliot, Holybush; Mr Ballingall, Dunbog; Mr Paterson, Plean Farm; Mr Mackenzie, yr. of Kintail; Sir Robert Menzies, Bart.; Rev. John Gillespie; Mr Mackenzie of Portmore; Mr Howatson of Glenbuck; Mr Connal Rowan of Meiklewood; Mr Cran, Kirkton; Mr Young of Cleish; Mr Matthews, Whitehills; Mr Middleton, Clay of Allan; Sir James Gibson-Craig, Bart. Convener—Mr Milne, Inverurie.

HIGHLAND INDUSTRIES.—The Committee on Highland Industries and Fisheries, at a meeting held on the 2nd November, suggested the premiums to be offered at the Perth Show next year.

MACHINERY COMMITTEE.—At a meeting of the Committee on Machinery, held on the 2nd November, the following premiums were suggested to be offered at the Perth Show, namely:—1. The most efficient and economical machine for depositing on or in the soil, by one operation, of clover and similar seeds, and that either in one general mixture from the same hopper, or separate mixtures from separate hoppers, of seeds of the clover type or form, and of seeds of the ryegrass type or form, special regard being had to the regular and even delivery of the seed on hilly and uneven ground, £15 and £7. 2. For the most convenient, easily erected, and accurate and economical weighing-machine for farm-carts and for live stock, to weigh up to 3 tons. Exhibitors to state the whole cost of erection, including all material required, but exclusive of cartage, £10. 3. The best and most useful collection of sanitary appliances, £5. The Directors approved of the various premiums suggested.

PERTH SHOW, 1887.—At a meeting of the Committee on General Shows, held on the 2nd inst., a memorial was submitted from the Council of the Clydesdale Horse Society of Great Britain and Ireland, suggesting—(1) that the last day for receiving entries should be altered to at least one month nearer the date of the Show than at present; and (2) that a fine should be imposed on all exhibitors who withhold their stock without sufficient cause being shown. The meeting agreed to recommend to the Board—(1) that the last date for receiving entries should be altered to a fortnight nearer the date of the Show; and (2) that no fine should be exacted from exhibitors who were unable to forward their stock to the Show. The committee also recommended that the usual days for holding the show should be adhered to, namely, 26th, 27th, 28th, and 29th July. Various other suggestions in regard to the Perth prize-list were made by the committee, and agreed to by the Board. A proof of the premium list, as approved by the Directors, will be submitted to their next meeting, previous to being laid before a meeting of members to be held at Perth next month.

THE SELECTION OF JUDGES.—Mr SCOTT DUDGEON moved—"That a committee be appointed to consider the present system by which judges are chosen for the General

Shows of the Society, and to recommend what changes are desirable in order to give more confidence to exhibitors and the public that awards are given without the slightest prejudice." He said he thought it must be patent to every one that the way in which the judges were chosen was very unsatisfactory, and from what occurred at Dumfries last year, the necessity for putting the arrangements in that respect on a better footing was all the greater. Mr Villiers seconded the motion. The Rev. John Gillespie, Mouswald, said he did not object to the main part of the motion, but he objected to the latter part of it, as he thought it was a reflection on the judges in the past. He proposed that the motion should read as follows:—"That a committee be appointed to consider the present system by which judges are chosen for the General Shows of the Society, and to recommend what changes, if any, are desirable." Mr Murray seconded Mr Gillespie's motion. Mr Scott Dudgeon said he did not object to the proposed alteration, but he thought the words "if any" should be left out. Mr M'Queen moved as an amendment that the committee be not appointed. Mr Marr seconded the amendment. On a division, 14 voted for the motion, and 12 for the amendment.

THE GENERAL SHOW, 1889.—The SECRETARY read an application from the Town Council of Hawick, and also a letter from Mr Oliver, Hawick, on behalf of the West Teviotdale Society and Hawick Farmers' Club, in favour of the 1889 Show being held at Hawick. Mr Elliot, yr. of Wolfelee, said he had been asked to support the application from the Town Council of Hawick. It was a matter which had been discussed a good deal in Hawick for about two months. He had stated that the first thing they had to do was to satisfy the Directors that there was suitable ground in the neighbourhood for the purpose. They had ground that they thought would be found suitable for the Show. There was also a main line of railway, and it was of great importance to have large siding accommodation, and a place where they were accustomed to have large numbers of cattle at the auction marts. There was also hotel accommodation for all classes. In a place which had a population of between 17,000 and 18,000 they would be able, he believed, to get good local contributions. He did not think that the Board should decide before the ground was inspected and reported upon. He would, therefore, move that a small committee be appointed to visit the town and see the accommodation, and report to the Board. Mr Villiers said he thought that the proposal should be delayed until Mr Scott Dudgeon should bring up his motion, which had reference to the extension of show districts, and when the question of holding the Show in Hawick, Dundee, and other places could be considered by a committee. Mr Marr asked if the application from Hawick meant to supersede the Kelso Show? The Secretary said that it would be instead of the Kelso show. Mr Scott Dudgeon said he thought that before they agreed to the motion of Mr Elliot they should give an opportunity to other districts as well as Hawick to have the Show held in them. There were many members in Roxburghshire who thought that Melrose and St Boswells were more convenient places for the Show than either Hawick or Kelso. He thought that if a committee were appointed, power should be given to visit other sites. When other districts heard that Hawick had made an application they might also have application from Gala-shiels, Melrose, and St Boswells. He moved that the matter lie over till next meeting. Mr Martin said he thought it was premature to do anything in regard to the application at present. He did not think that anything further required to be done in the meantime than that the proposal should be announced in the newspapers. Mr Elliot said that his motion did not bind the Society to anything. After some further conversation it was agreed to delay the matter.

PLEURO-PNEUMONIA.—A correspondence with regard to pleuro-pneumonia was remitted to the Veterinary Department. The other business was chiefly formal.

MEETING OF DIRECTORS, 1ST DECEMBER 1886.

Present.—Vice-Presidents—The Earl of Galloway, Wellwood H. Maxwell, Sir James H. Gibson-Craig, Bart., and John Scott Dudgeon. Ordinary Directors—James Park, Duncan Forbes, James M'Queen, J. T. S. Paterson, James Shaw, J. T. S. Elliot, Niven Matthews, John Middleton, James Murray, Robert Paterson, Harry Young, Alexander Murdoch, Walter Elliot, P. F. Connal Rowan, A. R. Mackenzie, John Kerr, W. H. Lumsden, W. J. Maxwell, John Ballingall, Hon. R. Baillie-Hamilton, Donald Fisher, John Cran, John Milne, James Hewetson. Extraordinary Directors—R. Vans Agnew, Mark J. Stewart, M.P.; James Hope, Charles Howatson, Colin J. Mackenzie, Alexander Dudgeon, Rev. John Gillespie, and F. E. Villiers. Hon. Secretary—Sir G. Graham Montgomery. Chemist—Dr A. P. Aitken, Auditor—Wm. Home Cook, C.A. Practical Engineer—James D. Park. Chairman of

General Shows Committee—Colonel Gillon. Chairman of Publications Committee—A. Forbes Irvine. The Earl of Galloway, and afterwards Mr Maxwell of Munches, occupied the chair.

Mr F. N. MENZIES reported apologies for the absence of Sir Robert Menzies, Bart.; Sir Alexander Jardine, Bart.; Sir David Baird, Bart.; Sir Wm. S. Walker, K.C.B.; Mr Drew of Craighallie; Mr Dudgeon, yr. of Cargen; Mr Martin of Auchendennan, and Mr Walker, Portlethen.

GENERAL MEETING.—The anniversary general meeting of the Society for the election of new members, and for other business, was fixed for Wednesday the 19th of January 1887, being the usual day for holding the meeting.

PERTH SHOW, 1887.—The premium list and regulations were again submitted and revised, previous to being laid before a meeting of members, to be held in the Royal George Hotel, Perth, on Friday the 10th December, at one o'clock.

OFFICE BEARERS AND DIRECTORS FOR 1887.—The report of the Committee on Office-Bearers and Directors for 1887 was read and approved, and the Secretary was instructed to communicate with the noblemen and gentlemen suggested to fill the vacancies which occur in January next before publishing their names.

DISTRICT SHOWS.—The report on district shows was postponed, but certain special grants were given.

COTTAGE COMPETITIONS.—The report of the Committee on Competitions for Cottages and Gardens, detailing the awards at the competitions held during 1886, and suggesting the grants for 1887, was submitted and approved.

VETERINARY DEPARTMENT.—The SECRETARY read a minute of the Veterinary Committee, dated 30th November, in which it was stated in regard to pleuro-pneumonia that the Privy Council should be urged to initiate exhaustive experiments as to the value of inoculation in suppressing that disease. This was approved of. The Board further resolved that a representation be made to the Privy Council, pointing out the unsatisfactory working of the inspection of cattle brought from Ireland to Scotland, and it was resolved that the Dublin Castle authorities be requested to receive a deputation from the Highland Society to urge stamping out pleuro-pneumonia in Ireland, and that an effort should be made to procure the co-operation of local authorities and others in this matter.

SHOWYARD STEWARDS.—The report by the showyard stewards, appointed to draw up rules for their guidance, was read and approved.

BURSARIES.—The SECRETARY reported that the following bursaries had been awarded:—H. R. Maitland, Alton of Coynach, Mintlaw; John E. Aitken, 39 Barony Street, Edinburgh; Daniel Steele, Merkland, New Cumnock, for £20 bursaries. W. M. Brunton, Inverkeithing; Robert Ferguson, Linlithgow; V. V. Brandford, 22 Clarence Street, Edinburgh; James Kerr, Midkelton, Castle-Douglas; Alexander Clyne, Quoybrae, Watten, for £10 bursaries.

PRICE OF FARM PRODUCE.—Mr SCOTT DUDGEON put a question to the Secretary as to what was being done about the inquiry into the price of farm produce.

The SECRETARY (Mr F. N. Menzies) said he had seen Lord Lothian, who told him that he was to hold a meeting as soon as he could, and that he would let him know when it was to take place.

AGRICULTURAL EDUCATION.—The Rev. JOHN GILLESPIE made a statement with regard to the chemical department and agricultural education, and mentioned that resolutions had been adopted at the meeting of the joint-committee held that forenoon, and which he now submitted for approval.

These resolutions were approved of.

MEETING OF DIRECTORS, 5TH JANUARY 1887.

Present.—Vice-Presidents—Sir James H. Gibson-Craig, Bart., and John Scott Dudgeon. Ordinary Directors—James Park, James McQueen, John T. S. Paterson, James Shaw, James T. S. Elliot, John Marr, Niven Matthews, James Murray, Harry Young, Alexander Murdoch, Walter Elliot, P. F. Connal Rowan, A. R. Mackenzie, John Kerr, W. J. Maxwell, John Ballingall, Hon. Robert Laillie Hamilton, Donald Fisher, John Cran. Extraordinary Directors—James Hope, Chas. Howatson, Andrew Allan, Colin J. Mackenzie, Alex. Dudgeon, Rev. John Gillespie, and F. E. Villiers. Chemist—Dr A. P. Aitken. Auditor—William Home Cook, C.A. Engineer—Jas. D. Park. Chairman of Committee on General Shows—Colonel Gillon. Chairman of Committee on Publications—Alexander Forbes Irvine. Sir James Gibson-Craig, and afterwards Mr Young of Cleish Castle, in the chair.

Mr F. N. MENZIES reported apologies for the absence of Sir Robert Menzies, Bart.; Sir Alexander Jardine, Bart.; Sir William S. Walker, K.C.B.; Mr Drew of Craighen-

callie; Mr Dudgeon, yr. of Cargen; Mr Forbes of Culloden, Mr Lumsden of Balmedie, Mr Martin of Auchendennan, Mr Maxwell of Munches, and Mr Middleton, Clay of Allan.

OFFICE-BEARERS AND DIRECTORS.—The SECRETARY reported the names of the noblemen and gentlemen who will be proposed by the Directors for election at the anniversary general meeting of the Society on the 9th current, to fill the vacancies in the list of office-bearers which had been published, in terms of the Charter.

FINANCE.—Abstracts of the accounts and state of the funds at 30th November were, in terms of the Charter, submitted to the Board, previous to being laid before the general meeting.

VETERINARY DEPARTMENT.—A report by the Committee on Pleuro-Pneumonia, together with a communication from the Privy Council in Dublin, having been read, a discussion ensued, in the course of which it was suggested that a deputation should be sent to wait on the Secretary for Scotland on the subject previous to any further steps being taken in the matter. It was also suggested that a strong remonstrance should be made at the general meeting on the subject of the arrangements for the transit of stock from Ireland into Great Britain.

CHAIR OF AGRICULTURE.—A letter was read from Mr John J. Reid, Exchequer Chambers, asking what was the intention of the Society as to continuance of grant. It was unanimously agreed to continue the grant for another year on the same terms.

CHEMICAL DEPARTMENT AND AGRICULTURAL EDUCATION.—A joint committee of the Chemical Department and Agricultural Education presented a report, and after some discussion a sub-committee was appointed to draw up a detailed scheme on the lines of the report of the committee of the 30th November 1886.

The Board approved of the course suggested.

GENERAL SHOW AT PERTH, 1887.—The report of the meeting of members held at Perth on the 10th of December was read. It stated that the premium list and regulations had been submitted and approved, subject to the following suggestions:—1. That £60 be struck off the prizes to be offered for Galloways, and the same amount of Ayrshires, and add £40 to each of the Shorthorn, Aberdeen-Angus, and Highland, making the premium for the different breeds as follows:—Shorthorn, £220; Ayrshires, £100; Aberdeen-Angus, £200; Galloways, £100; and Highland, £300. 2. That the premiums for three-year old fillies be increased from £10, £6, £3, and £2 to £15, £10, £5, and £2, making the amount of premium for agricultural horses £383, and £202 for hunters, roadsters, and ponies. 3. That the Directors be asked to offer a premium for a stallion to travel the district. 4. That the Directors be asked to offer prizes for greyfaced hogs and lambs (crosses got by Leicester tups out of blackfaced ewes). 5. That the Directors be asked to reduce the premium for long-woolled other than Border Leicesters, and short-woolled other than Shropshires, to meet the premiums suggested by No. 4. The Board resolved to adhere to the premiums as originally proposed in the prize lists; but on the motion of Mr Howatson, it was agreed to offer two prizes of £5 and £2 for the best blackfaced tup lambs.

SHOW, 1889.—A letter was read from the Mayor of Berwick on behalf of the Town Council, respectfully suggesting that the Show to be held in 1889 might advantageously be held at Berwick-upon-Tweed, and pointing out that the Society had held Shows there in 1841 and 1854, which were very successful, and gave great satisfaction to exhibitors. The consideration of the subject was delayed.

DISTRICT COMPETITIONS.—A report on alterations of the arrangements of the district competitions was brought before the Board, and it was remitted back to the committee to frame rules in accordance with their suggestions, and to report to the next meeting.

DAIRY DEPARTMENT.—Mr MENZIES was instructed to write to the secretaries of the Dairy Associations to send in their claims for their portion of the £100 voted to them, and at the same time to send a report of what work had been done, how many had been taught, and generally what good had been accomplished by the employment of the teachers.

ESSAYS AND REPORTS.—Various awards were made for reports lodged in competition, and the names of the successful competitors will be announced at the general meeting. Several subjects were deleted, and new ones added to the list for 1887.

UTILISATION OF URINE.—The SECRETARY submitted a list of upwards of forty papers received in competition for the prize of £400 offered to any one who shall discover a practicable method by which the valuable constituents of urine may be most profitably utilised.

FLAX GROWING.—A letter was submitted from Messrs W. & D. C. Thomson, Dundee, sending copies of a pamphlet on flax growing, which were circulated among the members.

PRICE OF FARM PRODUCE—It was arranged that the meeting of the Committee on the Price of Farm Produce be held on Tuesday the 18th inst. at 1.30 P.M.
The proceedings then terminated.

MEETING OF DIRECTORS, 19TH JANUARY 1887.

Present.—President—The Duke of Buccleuch and Queensberry, K.T.; Vice-Presidents—Wellwood H. Maxwell; Sir James H. Gibson-Craig, Bart.; and John Scott Dudgeon. Ordinary Directors—James Park, Duncan Forbes, James M'Queen, John T. S. Paterson, James Shaw, James T. S. Elliot, Niven Matthews, Robert Paterson, Harry Young, Walter Elliot, John Kerr, W. H. Lumsden, William J. Maxwell, John Ballingall, Hon. Robert Baillie Hamilton, Donald Fisher, John Cran, Sir David Baird, Bart.; John Milne, and Sir Robert Menzies, Bart. Extraordinary Directors—Robert F. Dudgeon, James Hope, John M. Martin, Colin J. Mackenzie, Alexander Dudgeon, Rev. John Gillespie, F. E. Villiers, and Colonel Hare. Chemist—Dr Andrew P. Aitken. Auditor—William Home Cook, C.A. Engineer—James D. Park. Chairman of Argyll Naval Fund—Admiral Maitland Dougall. Chairman of Committee on General Shows—Colonel Gillon. Chairman of Botanical Committee—Dr Cleghorn. Chairman of Publication Committee—Alex. F. Irvine. Chairman—The Duke of Buccleuch and Queensberry, K.T.

Apologies were reported for the absence of Mr Allan, Munnoch; Mr Drew, Craighcallie; Mr Hewetson, Auchembainzie; Mr Macalpine Leny of Dalswinton; Mr Mackenzie, yr. of Kintail; Mr Murdoch, Gartnait; Mr Murray, Catter House; and Mr Connal Rowan of Meiklewood.

The business had reference principally to the subjects to be brought before the general meeting of this date.

PROCEEDINGS AT GENERAL MEETINGS.

GENERAL MEETING, 16TH JUNE 1886.

Sir JAMES H. GIBSON GRAIG of Riccarton, Bart., Vice-President, in the chair.

NEW MEMBERS.—Forty-four candidates for election as Members were balloted for and admitted.

FREE LIFE MEMBERS.—Six holders of the Society's agricultural diploma were elected free life members in terms of the bye-laws.

DUMFRIES SHOW, 1886.—Colonel GILLON of Wallhouse, Convener of the Committee on General Shows, reported that the arrangements for the Show to be held at Dumfries from the 27th to the 30th of July were progressing satisfactorily. The following is a comparative statement of the entries at Dumfries in 1878 and on the present occasion :—

	1878.	1886.
Cattle,	357	287
Horses,	323	312
Sheep,	621	505
Swine,	39	32
Poultry,	303	144
Dairy Produce,	235	146
Implements,	2578	1639

The contract for the erection of the yard is in the hands of Mr James Farquhar, Bloomhill Place, Aberdeen, who did the same work when the Show was held at Aberdeen last year. During the Show the headquarters of the Society will be, as on former occasions, at the King's Arms Hotel. The contracts for the supply of refreshments in the yard have been given to Mr Sibbald, Maxwell Arms Hotel, Dalbeattie; Mr Gerrand, Grapes Hotel, Whithorn; Mr Hart, Castle Street, Dumfries; and Mrs Johnstone, Fountain Café, Dumfries (temperance booth). The forage contract is in the hands of Mr Matthew G. Wallace, Terreglestown, Dumfries. A large and influential committee has been named by the Commissioners of Supply to represent Dumfriesshire, the Stewartry of Kirkcudbright, and Wigtownshire. In addition to these there will be representatives from the burgh of Dumfries, as well as a deputation of Directors. The Duke of Buccleuch and Queensberry is president of the Society, and Mr Maxwell of Munches is convener of the Local Committee. The stewards of the Show are—the Rev. John Gillespie, for horses; Mr Mackenzie, yr. of Kintail, for cattle; Mr Walker, Portlethen, for sheep, swine, &c.; Mr Maxwell, yr. of Munches, for forage; and Mr Scott Dudgeon, Longnewton, and Mr Shaw, Skathmuir, for implements. On the recommendation of the Committee on General Shows, the Directors have resolved that the practice of judging previous to the Aberdeen Show last year is again to be adopted. Tickets will be sent on the 1st of July to all members residing in the United Kingdom, whose addresses are known, and on no account will duplicates be issued. All members not producing their tickets must pay at the gate, and the admission money will not be returned.

The report was approved.

PERTH SHOW, 1887.—Colonel GILLON then said he had the pleasure of intimating that the Town Council of Perth have unanimously agreed to allow the Society the use of the western division of the South Inch for the Show next summer, and that it has been remitted to the magistrates, with full powers, to arrange the terms and any other particulars in connection with the grant, and also to make all necessary arrangements in connection with the Show. The premium list and regulations would in due course be arranged by the Committee on General Shows and Directors, and submitted to a meeting of members in the Perth district.

The report was adopted.

DISTRICT SHOWS.—The Rev. JOHN GILLESPIE, Mouswald, in the absence of the convener of the District Shows Committee, said he had been asked to give in a report. The matter to be reported on was this: Recently it was remitted to the District Shows Committee to inquire as to the working of the district show system. Some changes were introduced into these grants some years ago, and this would be fully inquired into by the committee. But the object the Directors had in view in asking him to make this report was to this effect. The Directors hope that members of the Society, as well as district agricultural societies, would make any suggestions

that might occur to them, so that every information might be placed in the hands of the committee to enable them to adopt a satisfactory report. Circulars would be sent out to the district societies to that effect, and the committee and the Directors would be happy to receive any suggestions from them, or from any member of the Society.

DAIRY DEPARTMENT.—Mr M'QUEEN of Crofts gave in the report of the Dairy Department. He said that the grant of £100 given by the Society to assist the Scottish Dairy Association in giving instruction in cheesemaking was divided amongst the different local associations according to the amount each one had expended. He had also to report that £100 would be given again this year for the same purpose, but the Society trusted that in future dairy schools would be started by the Scottish Dairy Association. He might mention that a meeting of the Dairy Association was to be held at Dumfries Showyard to discuss the question of dairy schools. A paper on Scottish Dairying appeared in a late issue of the *Transactions* a most interesting paper, containing a great mass of information about dairy matters in Scotland.

The report was adopted.

IMPLEMENT DEPARTMENT.—Mr SCOTT DUDGEON, Longnewton, said—The results of the trials of cultivating instruments entered for competition at the Aberdeen Show were reported to the Directors at their meeting in the beginning of this month, and having been published in the newspapers immediately thereafter, it would be inexpedient that I should trouble you to-day with any details regarding them. Suffice it to say, that for autumn cultivating implements, two ploughs with attachments, Nos. 54 and 55 in catalogue, both made and exhibited by Thomas Corbett, Shrewsbury, were considered by the judges to have done the best work, and were awarded first and second prizes of £15 and £10; and a plough, No. 732B, made and exhibited by George Sellar & Son, Huntly, coming next in merit to these, was awarded a third prize of £5. For spring cultivating implements, the plough with revolving harrow attached (No. 56), made and exhibited by Thomas Corbett, Shrewsbury, came to the front, and was awarded the first prize of £20; and the second prize of £10 was gained by a grubber (No. 791), made and exhibited by William Webster, Milbrey, Fyvie. It is only right to mention that the land on which the autumn trials were conducted was, unfortunately, of too light and clean a character to admit of such a thorough and satisfactory test of the implements as could have been desired. The land on which the spring trials took place was everything that could be wished. The Society is much indebted to Mr Reith, Middlefield, and to Mr Milne, Mains of Esleumont, on whose farms these trials were conducted. I have to report that during the coming season three separate trials of implements are to be undertaken—the first for turnip-thinners, for which two prizes of £20 and £10 are offered, and three exhibitors have entered implements to compete. This trial will be held at Niddrie Mains, near Edinburgh, early in July. The second is for self-hinders adapted to work on hilly ground and among laid crops of grain. For these the prize money offered is £100, and four exhibitors have entered to compete. This competition will take place during the ensuing harvest season, in the Dumfries district. The third trial is for manure distributors. For these a first and a second prize of £20 and £10 are offered for machines to distribute superphosphates or such manures, either in rows or broadcast; and a first and second prize of £15 and £5 for machine to distribute the like manures in the furrow, and to be attached to a common plough. To compete for these prizes there are six exhibitors. This trial will also be held in the neighbourhood of Dumfries, and take place in October. All the implements entered for competition must be shown in the yard at the Dumfries Show.

The report was adopted.

THE TERMS REMOVAL (SCOTLAND) BILL.—Mr PATERSON of Birthwood reported that the committee appointed to look after the Terms Removal (Scotland) Bill had recommended to the Lord Advocate that the terms should be held uniformly throughout the country on 28th May and 22nd November, but the days fixed in the Bill were the 28th May for the Whitsunday term and 28th November for the Martinmas term. The Directors, instead of making any difficulty on the matter, had telegraphed stating they were quite willing to take these dates for the two terms, and he had no doubt it would be for the benefit of every one.

The report was adopted.

AGRICULTURAL EDUCATION.—Mr IRVINE of Drum reported that the annual examination of candidates for the Society's diploma and certificates in agriculture and certificates in forestry was held in the Society's Chambers, Edinburgh, on the 31st March, and two previous days. The number of candidates who presented themselves was twenty-two. The examinations resulted in six passing for the diploma,

ten for the first class, and two for the second class certificate in agriculture. At a meeting of the Society's Council on Education, held on the 2nd of March, it was resolved—"That the board of examiners for the diploma and certificates granted by the Society shall consist of not less than two examiners on each subject of examination." On the recommendation of the Council, the Directors have agreed to publish the examination papers along with the syllabus in the premium book.

PRIZES TO AGRICULTURAL CLASS.—Mr IRVINE also announced that the prizes given by the Society in books to the class of agriculture in the University of Edinburgh had been awarded as follows:—James T. Cameron, Tallisker, Skye, £4; H. Maifland, Alton of Coynach, Mintlaw, and J. Knox Ledingham, Slap, Turriff, equal, £3 each.

The report was adopted.

FORESTRY DEPARTMENT.—Dr CLEGHORN reported that the forestry examination took place at the same time as the agricultural. Three candidates presented themselves, and the examination resulted in two passing for the first class and one for the second class certificates.

The examination papers will in future be published in the premium book along with the syllabus of examination.

BURSARIES.—The following regulation has been adopted by the Directors with reference to the candidates for bursaries:—"All applicants for bursaries must be qualified by birth or residence in Scotland, and the Council on Education are entitled to consider each case on its merits—their decision to be final."

HIGHLAND INDUSTRIES COMMITTEE.—The CHAIRMAN said that, as convener of the Highland Industries Committee, he had to report that an application had been made to them by Mr Anderson Smith, Ledaig, to assist him in an exhaustive examination of the West Coast, more particularly as to food for fishes, and the localities in which the fishing industry might be most successfully prosecuted. Mr Smith proposed to have an expedition along the coast this summer, and he applied for the authority of the Society to say he was prosecuting the inquiries under their auspices. They agreed to that, and also resolved to give £50 towards defraying the expenses, on the condition that he would write a special report for the next volume of the *Transactions*. He would remind them that the development of the Highlands was one of the original purposes for which this Society was instituted, and they thought there were no more useful and fruitful grants than those relating to the fishermen on the west of Scotland.

The proposals were adopted.

CHEMIST'S REPORT.—Dr AITKEN reported as follows:—

Silos and Silage.—At the general meeting in January last year it was resolved that a committee be appointed "to gather and publish details of a practical nature regarding the use of silage." Shortly thereafter a committee of six was appointed, with Mr Mackenzie of Portmore as convener, who drew up a set of queries regarding the construction of silos and the making and using of silage, and sent to all persons in Scotland who were known to have silos. The Committee received replies from seventy experimenters, and thus became possessed of a large and varied amount of information; but as the great majority of the experimenters had had only one year's experience, it was considered desirable to obtain further reports regarding the use of silage during the past season, so that the information contained in the committee's report might be up to date. A second appeal was therefore made, which was heartily responded to, and the whole information received has been published in a condensed form in the *Transactions*. The general, or, I should rather say, the universal, opinion of those who have favoured the committee with their experience and views on the subject is, that silage is a form in which fodder may be successfully and economically preserved, and that the preservation of fodder in that form possesses advantages which render it a great boon to agriculture. In the absence of the convener, who takes a chief interest in this matter, and who was the prime mover in this investigation, I beg to move that the report of the committee be adopted, and that the committee be asked to continue its inquiry regarding the subject of silage. It is my opinion, and the opinion of those of the committee with whom I have been in consultation, that we are only at the threshold of the investigation. We have yet to learn what is at once the cheapest and most effective way of making silos, or making silage in silos, or independently of silos, so as to put the process within the reach of all who desire to use it.

Experimental Stations.—The experiments at the Society's stations have now reached the term originally fixed for them, and a concise report of the results obtained, and the observations made during the last eight years, has been published in the *Transactions*. The leases of the stations do not expire for two years, and the

Chemical Committee have resolved to utilise these in making some experiments to test the unexhausted value of the various manures that have been applied, and also to test the effects of these manures when applied to some crops that have not yet been under experiment at the stations. The crop for this year at Pumpherston is turnips, and that at Harelaw is potatoes, both of which have been got in in good order. For the benefit of those who do not receive the Society's *Transactions*, a separate report of the results of the Society's experiments has been published, and another upon the subject of silos and silage, both of which may be had gratis on application to the Secretary.

The CHAIRMAN said he wished to draw special attention to the last sentence in Dr Aitken's report, in which it was stated that separate reports of the results of the Society's experiments, and on the subject of silos and silage, might be had by members on application. Both reports would be of great advantage to the members of the Society throughout Scotland.

Mr FORBES of Culloden asked whether they might not be given to the general public as well.

The CHAIRMAN said that those who took an interest in the subjects should become members.

TRANSACTIONS.—Mr IRVINE of Drum laid on the table Volume XVIII (Fourth Series) of the *Transactions*.

The CHAIRMAN said he wished to state on behalf of the Directors that they regretted the late time at which the *Transactions* came out this year. The delay had been caused by the large amount of work in preparing the report on silos and silage. They hoped, however, in another year to have them issued as early as usual.

On the motion of Mr Forbes of Culloden, a vote of thanks was given to the Chairman, and the proceedings terminated.

GENERAL MEETING IN THE SHOWYARD AT DUMFRIES, 28TH JULY 1886.

The Duke of Buccleuch and QUEENSBERRY, K.T., President of the Society,
in the chair.

ADDRESS TO THE QUEEN.—The Chairman moved, and the meeting adopted, the following address to the Queen:—

"Unto the Queen's Most Excellent Majesty.—Most Gracious Sovereign,—We, your Majesty's most dutiful and loyal subjects, the Highland and Agricultural Society of Scotland, incorporated by royal charter, beg leave to approach your Majesty's throne with our most cordial congratulations on your entrance on the fiftieth year of your reign. It is with peculiar satisfaction that we, assembled from every part of your ancient kingdom of Scotland, express our sentiments of affectionate attachment to your Majesty. The long experience of your excellent endowments and kind heart, which adds the dignity of personal worth to the splendour of royalty, has endeared you to us, and renders the homage due to your exalted station the willing tribute of the heart to superior virtue. We again tender our devoted attachment to your sacred person and our loyalty to your throne; and we pray that your reign may be long, prosperous, and happy."—Sealed with the Corporate Seal of the Society, and signed by His Grace William Henry Walter, Duke of Buccleuch and Queensberry, K.T., President of the Society.

The CHAIRMAN moved votes of thanks to the Provost and town authorities of Dumfries, and to the Provost and town authorities of Maxwelltown—to the former for the sum voted in aid of the auxiliary fund, and for the cordiality with which they afforded their assistance in the arrangements connected with the Show, and to the latter for the cordiality with which they afforded their assistance in the arrangements of the Show. In moving these votes of thanks, the Chairman said it was always a great advantage to the Highland Society to meet with pecuniary aid in the districts in which their Shows were held, and still more was it an advantage to the Society to have the cordial and hearty co-operation of the authorities in these districts. They had these advantages on this occasion. He specially mentioned Provost Lennox, Dumfries, who was a man of energy, always anxious to do everything to further the welfare of the district in which he resided.

Provost LENNOX, in replying in behalf of the Town Council of Dumfries, said it was for the benefit of the town to have the Society there, and it was their wish at all times to further the interests of the Society.

The Hon. R. BAILLIE HAMILTON moved a vote of thanks to his Grace the Duke of Buccleuch, the President, for kindly coming to the Show that day at a time when he

was far from well. They all deeply regretted that his Grace was unable to take the chair at the president's dinner that night, but his coming there that day was a source of great satisfaction to them. The name of Buccleuch to agriculturists in Scotland was a household word. They could not but associate his Grace's name with that of his father, who was for so many years deservedly the most popular nobleman in Scotland. His Grace was following in his father's footsteps. They had that day seen in the yard that some of the finest black cattle were those bred by his father or by himself.

The CHAIRMAN thanked the members for their cordial expression of thanks. It was a very great regret to feel himself unable to attend the dinner that night. His will was to have been present, and although he would be absent his heart would be with them. He was glad to think that he could do anything in any way towards advancing the interests of the Show and of the Society. He had not been successful on that occasion in winning any first prizes. He had been beaten by animals of the Drumlanrig herd bred by his father, and that was a source of great satisfaction to him. If the keeping up of the stock of Galloway cattle, and the improving of the herd would be any advantage, he would make strenuous exertions to do so. He could only hope that they would breed other cattle that would compete with the prize-winners at that Show, and which would be not only a credit to themselves, but what was of more importance, an advantage to the district of the south of Scotland.

Mr MACKENZIE, JR. of Kintail, moved a vote of thanks to the Commissioners of Supply for the county of Dumfries, the Stewartry of Kirkcudbright, and Wigtownshire, not only for their generous support to the funds of the Society, but for their willing and active co-operation in carrying out the details connected with the Show.

Sir ALEXANDER JARDINE, as Convener of Dumfriesshire, expressed his most grateful thanks on behalf of the Commissioners.

Sir JAMES GIBSON-CRAIG said he had very great pleasure in moving a hearty vote of thanks to Mr W. H. Maxwell of Munches for his continued and zealous services as convener of the District Committee, this being the third occasion on which he acted in that capacity, and to the other members of that committee for their active co-operation on the various duties devolving upon them. So long as he could remember, Mr Maxwell was well known as a hearty supporter of the Highland Society, and as a great agriculturist. Mr Maxwell told him that day that he remembered every Show of the Highland Society held in Dumfries since 1830. He need not say how much aid the Directors of the Society owed to the district committee for making the preliminary arrangement on this occasion. They supposed and hoped that they would have a system of local government in Scotland, and there was no man who would be of more use to them in Scotland than Mr Maxwell of Munches.

Mr MAXWELL said he need not say how extremely gratified he was, not only by the motion that was proposed, but by the manner in which Sir James Gibson-Craig had introduced it. It had always been a pleasure to him to do what he could to promote the interests of agriculture in the district in which his lot had been cast. He took that not from himself but from those who had gone before him, and he knew that there were responsibilities upon all their shoulders, but it was a greater responsibility on the shoulders of one who could look back to his father, to his grandfather, and to his great-grandfather as having taken a deep interest in the agriculture of the south of Scotland. The duties that had devolved upon him on this occasion were very slight. Their indefatigable secretary, active and vigorous at all times, really took the whole work upon his own shoulders; and however willing and able local committees were, they found that he got before them, and did all the work they were instructed to carry out. If they had in any way tended to the success of this Show, he was sure it was to them all a great pleasure. It was a grand thing to have the Society coming to their district. At one time there was a spurious remark that the south of Scotland was a second-rate place; and when it was proposed that they should change the places at which the Show was held it was said that Dumfries should be considered as a place that did not welcome the Society. Well, he challenged that meeting and any one who knew the district to say whether it was true. On the last occasion the Show was held in Dumfries it had the best receipts ever drawn at any Show of the Society held in a similar district. He did not mean to say they would have the same things this year. In these bad times it was not likely that they would have these large attendances. He could remember the first Show in the Academy Yards, Dumfries, in the year 1830. Many and great were the changes that had taken place since. For these changes they had to thank the Highland Society and other agricultural societies that carried them out. Long might the Highland Society exist, and long might it exert itself in the great work before it.

Mr VILLIERS moved that the thanks of the Society be given to railway companies in England and Scotland for the facilities afforded to persons visiting the Show and to

exhibitors in the conveyance of live stock and implements to and from Dumfries. Not only, he said, with regard to the rates for the transmission of cattle, but also in regard to tickets and the number of excursion trains, there had been greatly increased facilities given by different railway companies in Scotland and England.

On the motion of Mr VANS AGNEW, the Chairman was thanked for presiding, and the meeting separated.

GENERAL MEETING, 19TH JANUARY 1887.

THE QUEEN'S JUBILEE.—The noble Chairman said the first business he had to bring before the meeting was a letter from the Home Secretary in answer to an address from the Highland and Agricultural Society congratulating Her Majesty on the entry upon her jubilee year. The letter was as follows:—

“Whitehall, 10th January 1887.

“Sir,—I have had the honour to lay before the Queen the loyal and dutiful address of congratulation of the Highland and Agricultural Society of Scotland on the occasion of Her Majesty having entered the 50th year of her reign, and I have to inform you that Her Majesty was pleased to receive the same very graciously.—I am, sir, your obedient servant,

(Signed)

HENRY MATTHEWS.

“The President of the Highland and Agricultural Society of Scotland, Dalkeith House, N.B.”

NEW MEMBERS.—Sixty-eight candidates for election as members were balloted for and admitted.

OFFICE-BEARERS.—The following list of office-bearers was submitted for approval:—President—The Duke of Athole, K.T. Vice-Presidents—The Earl of Elgin, Viscount Stormont, Rev. John Gillespie, and Colonel Gillon of Wallhouse. Ordinary Directors—David Buttar, Corston; James Park, Dechmont; Lord Arthur Cecil, Orchardmains; Patrick Stirling of Kippendavie; C. Macpherson Grant of Drumduan; George R. Glendinning, Hatton Mains; Sir John Innes of Edengight, Bart.; and Robert F. Dudgeon, yr. of Oargen. Extraordinary Directors—The Earl of Airlie, the Lord Provost of Perth, Sir John Ogilvy, Bart.; Sir James T. Stewart Richardson, Bart.; Sir Alexander M. Mackenzie, Bart.; John Balfour of Balbirnie; William Dingwall, Ramornie; Thomas Ferguson, Kinnochtry; John Gilmour of Montrave, Alexander Macduff of Bonhard; James Shaw, Skaithmuir; James M'Queen of Crofts, Sir W. C. Anstruther, Bart.; and John T. S. Paterson, Plean Farm.

Mr GUILD, The Abbey, North Berwick, said that before Mr Turnbull submitted the amendment, of which notice had been given, he had several questions to ask. The first was—Was it a fact that Lord Arthur Cecil received one more vote than Mr Scott Dudgeon? the second—Was it not also a fact that Mr Scott of Mervingslaw, who intended to vote for Mr Scott Dudgeon, did not receive a voting paper, and was in consequence disqualified? and the third—Were any votes recorded for Mr Scott Dudgeon disqualified, and if so, what were the grounds of disqualification?

Sir JAMES GIBSON-CRAIG said he happened to be in the chair at the Directors' meeting when the report was made. It was a fact that Lord Arthur Cecil received one more vote than Mr Scott Dudgeon. As to whether the other gentleman—a Mr Scott—received a voting paper or not, he could not say. As to the third point, on the motion of Mr Paterson, a sub-committee was appointed to go over the disqualified votes, and they returned a report that there was not the slightest doubt about the disqualification of any one of the votes thrown aside.

Mr PATERSON of Birthwood said there was one vote for Mr Scott Dudgeon thrown aside to which a penny receipt stamp had been affixed. The stamp had been cut out of a cheque, and Mr Crole, of the Inland Revenue, when consulted by the Secretary regarding it, said the gentleman who had thus used the stamp had rendered himself liable to a fine of £50.

Mr MARTIN of Auchendennan, said he had heard with astonishment Mr Paterson's statement, because it was understood the matter was a private one, and was not even to be told to the Directors. But, as stated, one paper was undoubtedly disqualified from having a wrong stamp put on it, while another was disqualified from the omission of a name. Two or three days afterwards a gentleman wrote to Mr Menzies regarding the omission, and stating that he intended to vote for Lord A. Cecil. That vote was not counted, so they were exactly in the same position as before.

Mr PATERSON said that if he had made a mistake, Mr Martin had gone a little further.

Mr JAMES TURNBULL, Eastfield, Kelso, then moved—“That because of the false

issue laid before the members in the Kelso district by the following circular letter :—
 'Orchardmains, Innerleithen, September 30, 1886.—Dear Sir,—The unwarrantable assertions made by some of Mr Scott Dudgeon's supporters have compelled me to trouble you with this circular. Those gentlemen who honoured me by nominating me for election as a director of the Highland and Agricultural Society did so, I imagine, because they believed that the best interests of the Society would be tolerably safe in my hands, and that my election would not further the obstructive tactics which, whatever may be the aim of those pursuing them, will gradually force every one with a spark of gentlemanly feeling or business-like instincts to leave the Board. Should I be elected, it will be my endeavour, as it has always been, to promote any improvements which may be for the good of the Society; but I trust I shall be able to do so without wounding the feelings of, and heaping insults upon, those who have spent a lifetime in raising the Society to its present eminence.—Yours faithfully, (Signed) ARTHUR CECIL'—the name of Lord Arthur Cecil be deleted from the list of Ordinary Directors now nominated for election, and that the name of Mr J. Scott Dudgeon be substituted therefor." In supporting his amendment, Mr Turnbull said he had endeavoured to word it in such a way as to make apparent to the members present the reason why it had been brought forward. It would be necessary to explain why many of Mr Dudgeon's supporters had deemed it necessary to bring this matter before the meeting. From the intimate knowledge which Lord Arthur Cecil had of matters appertaining to agriculture, they did not doubt for one moment his fitness or ability to undertake the duties of a director of that Society. It was not upon grounds such as those that they based their objections. They did so simply and solely upon the fact of his having issued a circular reflecting upon the conduct of a gentleman whom they held in the highest estimation, and placing a false representation and issue before the members in the Kelso district. It was with surprise and indignation that they heard these charges against a director whom they all knew, and against the conduct of one whom they had every reason to hold in the highest respect and esteem. It was not his intention to touch upon the statement in the circular reflecting upon the conduct of certain of Mr Scott Dudgeon's supporters as having made use of unwarrantable assertions. It was not stated what the assertions were, nor did it mention the names of those who were unfortunate enough to fall under his Lordship's displeasure. The other part of the circular, however, was of a different character; and although Mr Dudgeon's name was not mentioned, it was implied, and accusations were hurled against him which, if true, would render him unworthy of their support. It was implied in the circular that Mr Scott Dudgeon had been in the habit of using obstructive tactics at the Board, tactics of such a nature that, had they been persevered in, they would have prevented any one of "gentlemanly feeling" or of "business instincts" from continuing to sit at the Board. It was further implied that he had been in the habit of wounding the feelings and susceptibilities of, and of heaping insults upon, gentlemen who had rendered almost lifelong service in the interests of the Society. These were grave and serious charges. If they were true, he for one would be the first to withdraw that support which he had always given to Mr Scott Dudgeon. If, on the other hand, they were not true, then they could only view the conduct of Lord Arthur Cecil as having been most unwarrantable and unjustifiable, and as, in their opinion, rendering him unfit to take a seat at the Board of that Society. It was for Lord Arthur Cecil to make good the truth of the charges he had made. They were not disposed to accept mere assertions without concurrent testimony of them, and unless Lord Arthur Cecil was prepared to substantiate these assertions by something more than words, they could not find words sufficiently strong to express the indignation they felt at the sight of an honest man's conduct being traduced in the way it had been. Mr Dudgeon's supporters wished to assure Lord Cecil that they did not believe the charges with which he had so freely bespattered the reputation of one who had always tried to do his duty, and to record their strong disapproval of the issuing of a circular so unwarrantable, so unjustifiable, and even, to a certain extent, so spiteful in its character.

Mr HENDERSON, Shidlaw, seconded the amendment, and said he had read the circular with wonder and surprise. The circular was a base and scurrilous one, and if addressed with no name under it, would have been treated as it deserved—with the silence of contempt. But this circular bore the impress and sign of the honoured name of Cecil, and surely it would have been too much to expect the friends of Mr Scott Dudgeon to allow it to pass unchallenged. Therefore they had brought forward the amendment in order to allow Lord Cecil, if he was present, either to substantiate the assertions he had made or to tender an ample apology to Mr Dudgeon. But, if he did neither, he hoped the gentlemen present would show their disapproval of his conduct by removing his name from the list of Directors and substituting that of Mr Scott Dudgeon. He had been asked to try and remove a misconception which had

prevailed in the Kelso district, and which had led to Mr Scott Dudgeon's defeat. The misconception was this—Mr Dudgeon proposed a motion to the following effect — “That the Ordinary Directors who may take office shall not be eligible to be re-elected in the same capacity for at least one year.” A great number of members of the Kelso district believed that Mr Dudgeon was going against his own motion when he allowed himself to be put up for nomination for the ordinary directorship. But Mr Dudgeon had been elected an Ordinary Director in 1880. In January 1884 he retired, and did not put himself forward for re-election, for another gentleman was chosen in his place. By this action he fulfilled the conditions of his motion. No doubt, by courtesy and kindness, the Directors appointed Mr Dudgeon to be an Extraordinary Director, and this office he held for two years, while he was a Vice-President one year—which was surely a strange thing if the expressions of Lord Cecil were true.

Mr GUILD said he was sure they all regretted that such a question had been raised, but, on the other hand, he believed such a question was necessary to vindicate the character and purity of election. He was satisfied that the letter must have come as a very great surprise to all the members of the Highland Society. From the reports they had been able to gather from the newspapers—and these reports, he might say in passing, were exceedingly small—the members understood that the meeting of the Board was a sort of earthly paradise where no jarring note ever troubled the surface of their serenity. But, on the other hand, they found instead that they had a perfect bear garden, which was not to be exceeded even by an Irish night in the House of Commons. He need not quote any extract from the letter, but pointed out that two questions required consideration. The first was—What opportunity during recent years had Lord Cecil to acquire any knowledge of Mr Scott Dudgeon's character at the Board? and the second—How far was the character given him deserved? He found, in looking over the *Transactions* of the Society, that in 1883 and 1884 Lord Cecil was not a member of the Board. In 1885 he was a member and a vice-president, but only attended four Directors' meetings during the whole year. In 1886 he was not a member of the Board. Thus, they had Lord Cecil making strong insinuations against Mr Scott Dudgeon when he had only had the opportunity of seeing him at four meetings. Was it common sense to believe that Lord Cecil was entirely cognizant of what took place at the Board? If he was not, he had no right to come forward with a letter impugning Mr Scott Dudgeon's conduct at the Board meetings. As an outside member, he declared that there was none but held Mr Dudgeon in the highest esteem. He had been one of a few members who had come forward lately in the interests of progress, and it was right he should be backed up in what he had done.

Mr ELLIOTT LOCKHART, as a member of the Kelso district, wished to say that he dissented altogether from the motion put forward by Mr Turnbull. He did not agree that a false issue was raised. He regretted the terms—the rather intemperate terms—of Lord Arthur Cecil's letter, but, at the same time, it was to be borne in mind that the letter was a rejoinder to a letter put forward by Mr Turnbull himself. Mr Turnbull took upon himself to champion Mr Scott Dudgeon, and ought to be the last person in the world to object to a rejoinder. He considered Mr Turnbull was putting too much stress upon a piece of intemperate electioneering in saying that a false issue was put before the electors. The nomination of Lord Cecil by a narrow majority was simply a nomination, and subject to the approval of the general meeting; but if the voice of the district were not to be the real decision of the matter, what became of all their vaunted new rules of election? This matter at present affected only the Kelso district, but if the decision were set aside it might affect any other district in any other year.

Mr TURNBULL—I don't think it would be necessary for me—

The CHAIRMAN interrupted Mr Turnbull with the remark that he must delay his reply until the speakers on the other side had finished.

Mr RUTHERFORD, Printonan, expressed his sympathy with the remarks of Mr Lockhart.

The Marquis of LOTHIAN said he regretted exceedingly the personal questions introduced into this matter. He enjoyed the friendship both of Lord Arthur Cecil and of Mr Scott Dudgeon, whom he had known for a long time as an active member of the Society, but it appeared to him that the personal question was not one to be considered at all. The question of who was to be thought, rightly or wrongly, as the best member of the Board of Directors was one to be decided by the members of the district, and when it came before the Society it put it in a position it ought not to occupy. That was pretty nearly all that should be said on the subject. Lord Cecil was returned by a very narrow majority—so narrow that a scrutiny took place. After the scrutiny it was decided that Lord Cecil was returned by a majority of one. That was a narrow majority, but still it was quite sufficient to return a member to

the House of Commons ; and, although the Highland Society was a very much more important body, still the same rule held good—a majority, large or small, governed the election. The Society would not be acting rightly by itself if it interfered with the election of a member that a district had already chosen. He regretted that Mr Turnbull had introduced the question of personal fitness, and sincerely trusted that, without going into the question of right or wrong, or who was the best or the worst to be on the Board of Directors, the vote of the Society would be to uphold the decision of the district.

Mr SCOTT DUDGEON said he had hoped that before he rose his honourable opponent, Lord Arthur Cecil, would have given an explanation that he had all along refused to give. No one regretted more than he did that this matter had come before a general meeting of the Society, and no one had taken greater trouble to prevent it coming up at such a meeting. He, however, felt it to be a matter that the Board should pass an opinion upon, for he was accused of conduct which, if correct, unfitted him for any share in the management, and, if false, rendered him who made the accusation unfit to sit on the Board. It was because of the nature of the accusation and the character and position of the accuser that it was necessary, when the Board had refused to take up the matter, his supporters should bring it before a general meeting of the Society. He had written to Lord Cecil telling him he intended to bring it before the meeting, and saying if he had any explanations to make he should be glad to consider them. Lord Cecil did not think it necessary to answer his letter at all. He thought he was entitled to ask the Board, who knew his conduct at its meetings, whether these accusations were true or false.

Sir JAMES GIBSON-CRAIG said there was a strong feeling on the Board that it was not their duty to interfere with the personal wranglings of people competing for places.

Mr SCOTT DUDGEON said that, under the circumstances, if the amendment were passed, he had no intention to act as a Director. He had, therefore, to ask Mr Turnbull either to withdraw his amendment or to substitute for his name that of Mr John Clay.

The CHAIRMAN said it would be well to deal with the question before them before introducing another amendment.

Mr HENDERSON of Stenmeter agreed that it was incompetent for the Society to interpose between private members and interfere with the results of an election decided by the Kelso district. He moved, as an amendment, the previous question.

The noble CHAIRMAN pointed out that this simply meant the motion for the election of office-bearers.

Mr LINDSAY, Meadowflat, said he would second Mr Dudgeon's amendment. No matter how extreme the words Mr Turnbull might make use of in his letter, Mr Dudgeon was not responsible.

Rev. JOHN GILLESPIE, Mouswald, said he had been on the Board for the past six years, and during that time had been absent from one meeting only. He was therefore in a position to bear testimony to what had taken place at the Board. There were two charges made—one of obstructive tactics, and the other of heaping insults upon unknown persons. He asserted fearlessly, and challenged any member of the Board to deny his statement, that obstructive tactics had never been pursued by any member, and nothing had been done to justify the assertion that Mr Dudgeon or any other person had heaped insults upon any one. No man in his knowledge had done a greater amount of work of value than had Mr Scott Dudgeon.

Mr TURNBULL then replied, and said the letter referred to by Mr Elliott Lockhart alluded to the nomination, and was not of a character to call for Lord's Cecil's immediately maligning the character of his opponent. He wished, with the consent of the meeting, to withdraw Mr Scott Dudgeon's name from the amendment and insert that of Mr Clay.

The Marquis of LOTHIAN said it was quite incompetent to impose a member on the district. Notice of motion of the second amendment should have been given.

Mr SCOTT DUDGEON, who was interrupted by cries of "Vote," said the amendment was quite competent. There was no necessity for notice of the amendment. If any motion were before the meeting—as there was at present—it was quite competent for any one to move an amendment to it.

The motion for the election of office-bearers was being put, when

The Rev. J. GILLESPIE interposed, and asked against which of the amendments before the meeting the vote was to be taken. There could be no objection to the amendment, for, on one occasion—on the spur of the moment—Mr M'Combie had been moved, and no opposition had been offered.

Mr ELLIOT, yr. of Wolfalee, protested against any names being submitted which had not previously been submitted to the members of the district. The case referred to by Mr Gillespie was before the system of district elections.

Mr MARTIN said he also protested against the reading of the constitution as made by Mr Elliot. There was no doubt the nomination by the districts was merely a recommendation to the meeting, and it was quite competent for any gentleman to move the substitution of one member of the Society for any other.

The noble CHAIRMAN asked for a show of hands in favour of the amendment with the name of Mr Clay, and it received the support of sixteen members.

The amendment, as originally proposed, was then put to the meeting, with Mr Scott Dudgeon's name in it, and fifty voted for it.

On the final vote being taken, thirty supported Mr Turnbull's amendment, while an overwhelming majority held up their hands in favour of the motion approving of the list of office-bearers as originally proposed.

The Earl of ELGIN, as senior Vice-President, then took the chair, in the absence of the Duke of Athole, the President. In doing so, he said it was his first duty to thank the members, on behalf of the office-bearers who had just been elected, for the honour they had conferred upon them in electing them to that position in the Society. For himself, he had only to say that he was afraid he was not so well acquainted with the details of the Society as he should have liked to be. In anything he did in that chair he would observe the utmost impartiality with regard to any business that might be brought before them. He had to submit to them the following resolution, which he was sure they would adopt with cordiality and unanimity:—"That his Grace the Duke of Buccleuch and Queensberry, K.T., having presided over the Highland and Agricultural Society of Scotland during the past year, the thanks of the Society are due to his Grace for the zeal exhibited by him in promoting its sufficiency and prosperity, for presiding at the general meeting of members held at Dumfries on the occasion of the general Show there, and for the dignity, urbanity, and ability with which he discharged the duties of the office of President."

The Duke of BUCCLEUCH returned thanks for the motion which had been made. He could only express his very great regret that at the time of the Dumfries Show circumstances had prevented him from doing his duty as he would have wished to have done. His object had been and always would be to be of use to the Highland Society.

FINANCIAL STATEMENTS.—Mr JAMES AULIJO JAMIESON, W.S., submitted the financial statement of the Society as at 30th November last, from which it appeared that the amount of the Society's funds was £66,335, 3s. 7d., exclusive of £3449, 6s. 1d. under the head of the building fund, £500 as the Tweeddale medal fund, and £1000 as the estimated value of the furniture, paintings, books, &c., in the Society's offices. The income for the year amounted to £5582, 10s. 7d., including £2601, 15s. 10d. as interest and dividends on investments. The expenditure, beginning with £1630, 4s. 6d. as establishment outlays, reached £6653, 12s. 11d., leaving a probable deficit on the year of £1076, 2s. 4d. It is estimated that of the deficit, £677, 15s. 5d., is attributable to the Dumfries Show, which, as will be remembered, was unfortunate as regards weather.

Admiral MATTLAND DOUGALL of Scotsraig submitted the accounts of the Argyll Naval Fund for the year, which showed a capital of £6091, with an income for the year of £240, 2s. 2d., the expenditure being five allowances of £40 each—£200 in all.

The statements were approved of.

DUMFRIES SHOW, 1886.—Colonel GILLON of Wallhouse, convener of the Committee on General Shows, said—After the very full reports which have appeared in the newspapers, both as regards the exhibition at Dumfries and the subsequent implement trials, it only remains for me to briefly refer to the financial results of the meeting. From the accounts which have just been submitted, it will be observed that the result has not been satisfactory, the total probable loss, as shown in the accounts, being £677. This deficiency is accounted for, it is believed, by the state of the weather during the last two days of the Show. On the occasion of the exhibition being held at Dumfries in 1878 there was a surplus of £300. The sum collected at the gates, &c., during the Show in 1878 was £3308. On last occasion it only amounted to £2314, so that the difference in the results between the two Shows is entirely to be accounted for by the falling off in the receipts at the gates.—Approved.

PERTH SHOW, 1887.—Colonel GILLON then said, as announced at the two last general meetings, the Show for the current year falls to be held at Perth, and the Directors have pleasure in reporting that all the arrangements are going on most favourably. The usual days for holding the meeting—namely, the 26th, 27th, 28th, and 29th July—have been adhered to. The last days for receiving entries have been fixed as follows:—Implements and other articles, Friday, 13th May; stock, poultry, and butter, Friday, 10th June. No entry can be received later than those posted on

Friday night, 10th June. Perth being the most central of the show districts, the classes of stock and amount of premiums have been fixed with a due regard to the whole of Scotland. In cattle the same amount has accordingly been fixed for each breed. The Tweeddale medal will this year be given for the best Shorthorn bull in the yard. The sum of £574 has been set aside for horses, and £386 for sheep. As the premium list will forthwith be published, he need not further refer to the different sums offered. The total amount is £2140. In accordance with the wishes of the members in the district, arrangements will be made to have a working-dairy open during the Show. It was intimated that the council of the Shropshire Sheep Breeders' Association and Flock Book Society had decided to give £10, or plate of that value, for the best tup in the Shropshire classes at Perth; the tup to be bred in Scotland by the exhibitor.—Approved.

THE SHOW OF 1888.—Colonel GILLON further reported that the General Show of 1888 would be held at Glasgow, and in due time the arrangements would be brought before the members of the Society.—Approved.

THE COMMEMORATION OF THE JUBILEE YEAR.—The Hon. G. WALDEGRAVE-LESLIE asked whether the Directors proposed commemorating the Jubilee year at Perth or elsewhere. He hoped the Directors would take the matter under consideration.

Colonel GILLON—I should think that will come under the consideration of the new Board which has just been appointed.

The Hon. G. WALDEGRAVE-LESLIE—May I have an assurance that it will be taken up?

Rev. Mr GILLESPIE explained that at a meeting of the Directors that day a proposal was made on this matter, but, in the absence of the gentleman who had given notice of the motion, it was delayed to the February meeting, when the new Board would be in office, and it would be for them to say whether there was a likelihood of there being any display of loyalty in this particular manner.

THE ALLOCATION OF PRIZE MONEY.—(Complaint by Perthshire Members.—Mr SCOTT, Hill of Ruthven, said he regretted the necessity of his being there that day to move a motion antagonistic to the decision of the Directors in regard to the allocation of the prize money among the different breeds of cattle to be exhibited at the Perth Show. The Directors called the members of the Perth Show district together on 10th December to consider the matter and make recommendations. They had done so, and the recommendations were carried unanimously at that meeting, but were summarily set aside by the Directors, without giving the slightest reason for so doing. If they had not intended to adopt the recommendations in their entirety, or in some modified form, what was the use of calling the Perthshire members together at all, to be insulted by what they did being entirely disregarded? Nor were the Directors courteous enough to say for what reason. On asking the Secretary, he informed him that it was because they had acted in a selfish spirit in cutting down the prizes of breeds from a distance. In what did their selfishness consist? Simply in trying to allocate the prizes according to the numbers, value, and importance of the different breeds to the agricultural community of Scotland. This was the chief object for which the Society was brought into existence. The breeds they were said to have cut down were the Ayrshires and Galloways, which were very little known beyond the districts from which they derived their names. That district occupies about one-eighth of Scotland. They might be very suitable for their own district, but that was no reason why they should be subsidised by prize money at the expense of the other seven-eighths of Scotland, where they are entirely unknown. It would surprise members when they knew that such an insignificant breed as the Ayrshires had got by far the largest amount in prize money during the last circuit of the Shows, while a still less distinguished breed, the Galloways, had received very nearly the same amount as the Aberdeen-Angus breed. Perhaps it was to enable the Directors to continue this injustice that their recommendations were snuffed out. They had no reason to anticipate that the numbers forward at the Perth Show this year would be greater or materially different from what they were in 1879, when there were shown 33 Galloways. These were probably the property of a very few individuals, while fifty or sixty breeders of Aberdeen-Angus were left to scramble for the same amount of prize money, while breeders of Ayrshires and Shorthorns were in much the same position. Would the breeders of Shorthorns and Aberdeen-Angus cattle, who formed so important a part in the agricultural economy of Scotland, submit longer to have these breeds placed second to Ayrshires in the amount of prize money? Surely it could not be expected that such an injustice should continue? No doubt the aim of the Society ought to be to benefit the greatest numbers, but the Directors of the Highland Society reversed this order, and subsidised and fostered the few at the expense of the many. And because they tried to put this matter of prize money as it honestly should be, they were branded as being selfish. The next part of the indictment

against them was that they tried to cut down the prizes of breeds from a distance, but he could not see that the distance was any greater from Dumfries to Perth than from Perth to Dumfries. Yet at Dumfries £236 was awarded to Galloways, and only £160 for the Aberdeen-Angus. This was surely cutting down the breeds from a distance with a vengeance; but what was quite fair at Dumfries was gross selfishness at Perth. This showed that there was surely some influence in the directorate from the south-west of Scotland of which they know nothing, or this injustice could not continue. They might ask where were the Directors appointed by the Perth district to watch over their interests? If this was the way they were to do, the sooner they have a change the better would it be for them, and they must try to effect it as soon as possible. Shorthorns and Aberdeen-Angus, which, with the crosses springing from them, had long been the glory of Scotland and other lands, were to be subordinated in the matter of prize money to insignificant breeds like the Ayrshires and Galloways, by the Directors of this Highland Society, who seemed to be sufficiently Highland when they could arrive at such a Highland conclusion. He moved that the recommendations of the meeting held at Perth be adopted.

Mr CRAWFORD, Balgarvie, seconded the motion. He said that the least thing that the Directors could have done was to have made a little addition to the prize list regarding Polls and Shorthorns. He thought that grayfaced sheep ought to have been mentioned in the list. That class of sheep had done more to assist the tenant-farmers in the Perth Show district than any class in Scotland. He would like to know why their recommendations were thrown overboard without any reason having been given. They were, he thought, quite entitled, in common courtesy, to have got some reason. He could not understand how the recommendations had been thrown aside. If there was any party better qualified to judge of the requirements of a district than another, it was those who lived in it.

Sir JAMES GIBSON-CRAIG said he was afraid the gentlemen who had spoken had made a mistake. They had referred to this Show as a district show. The Directors looked on it as a national show, and it was as a national show that they had allocated the prizes. They had tried to do justice by all the different classes. It seemed to them that to cut down the most important milking, and one of the most important beef classes to £100—less than would be given at a local show—would be grossly unjust to the people who had these breeds. He had always looked on Perth as the most central place in Scotland, but he was sorry to see that its immediate inhabitants thought it a place to which nobody could go except those around it. He thought they had done fair by everybody. It was only when they went to the extreme south, or to the extreme north, that any substantial difference was made. As to the grayfaced sheep, he must say that the principle of the Society was to give prizes for pure bred stock.

Mr MAXTONE GRAHAM of Cultoquhey, as a Perthshire man, said he took no offence that the suggestions made by his friends had been overruled by the Directors. He understood that the Perthshire men wished to have a larger amount of money allocated among the classes of stock which they bred immediately around them to the disparagement of those classes which they did not breed. Possibly that was natural; at the same time they must admit that there was a grain of selfishness in it. He would like his friends to consider that they were not only breeders of Shorthorns and Polled heifers, but also of West Highlanders and blackfaced sheep. Suppose they went with these classes to a district where they were not so fully bred, he thought they would feel it a hardship if there were no prizes, or only infinitesimal prizes, given for these classes. He trusted that his friends would see that were these motions to be carried the result would be to subvert entirely the principle on which they had hitherto acted. The Society was not for Perthshire nor for any special county, but for Scotland, and he therefore thought the motion should be withdrawn.

Mr VILLIERS wished, as a Galloway breeder, to say that they did not claim any great superiority over others, but simply that their cattle deserved to be represented. It seemed to him, after the treatment that Perthshire received when they brought their cattle down to Dumfries, that it was a little hard that they should now insist on having allocated to them more money for the class specially indigenous to their neighbourhood than for any other class. If they took the trouble to look at the premium list, they would find that Shorthorns were to receive £180 this year, whereas they only got £160 last year.

Mr SCOTT—The Galloways got £236 at Dumfries.

Mr VILLIERS—That may be the case, but all the premiums have been reduced this year.

Rev. Mr GILLESPIE said that Mr Scott had reiterated the statement as to the £236 given at Dumfries. Galloways did get £236 at Dumfries, precisely the same as the Aberdeen-Angus got at Aberdeen.

Mr SCOTT—We are not speaking of Aberdeen.

Mr GILLESPIE—Apparently Mr Scott has travelled neither north nor south. As to Ayrshires, Mr Gillespie said that there were far more pure Ayrshires than of any one breed in Scotland. It was a bad time for Ayrshires showing. The Ayrshires had done more for rent-paying farmers in Scotland than any other breed. He protested against making this great national show a district show.

Mr W. S. FERGUSON, Pictstonhill, complained of the way in which the Perthshire members' recommendations had been treated. It seemed to him that the whole system of giving the members of a district the right to make recommendations was a burlesque.

Mr GARDINER, The Priory, Auchterarder, also expressed a feeling of disgust at the way in which their recommendations had been treated. He had great pleasure in supporting the motion, notwithstanding the remarks of Mr Maxtone Graham. The Directors could not have used a set of men worse than they had done the Perthshire members by the way in which they had treated their recommendations.

Sir ROBERT MENZIES said he had been charged with having failed in his duty in not supporting the views of the tenant farmers of Perthshire. It appeared to him that their views were mistaken. The Show was for the whole of Scotland, and the Directors, in asking suggestions from the Perthshire members, did not agree to adopt them.

Mr STIRLING of Kippendavie said he had heard a good many complaints of the way in which the Society had treated the meeting in Perth. There was a feeling amongst the farmers that if there had only been a letter from the Directors explaining why the recommendations were absolutely ignored, it would have been much more satisfactory.

Sir JAMES GIBSON-CRAIG, speaking with regard to fillies, pointed out that the amount set aside for that class this year was £83, while last year only £45 was given. With reference to the stallion it was found unsatisfactory to engage a stallion for the Show district. There was no discourtesy meant towards the Perthshire members by the Directors. These suggestions were fully considered at the last meeting of the Board, and he thought even many of the gentlemen from the Perth district would admit that their suggestions were either unreasonable, or unfair to somebody else. It was their duty to look after the interests of the country, and he thought they had done so.

Mr WYLLIE, W.S., while sympathising with what had been done by the Directors, thought it was very hard if the members from the country in which the Show was held were asked to give recommendations to the Directors, that these recommendations should be silently set aside, without either intimation or reason being given. That might be avoided if they would allow the members from whom they received recommendations to send their chairman and a couple of their number to the meeting of the Directors at which the recommendations were to be considered.

Mr CHALMERS, Shielhill, after complaining of the way in which the Perthshire farmers had been used, said he thought the Society should provide an entire horse for the Show district, and pointed out that the Royal Agricultural Society of England had given £1000 and five gold medals for entire horses, to serve the northern district of England. He concluded by submitting a motion to the effect—"That this meeting regrets the action of the Directors in withdrawing the premiums for entire horses in Show districts, and resolves to recommend the Directors to reconsider their resolution, and to make a grant of £250 for that purpose."

Mr VILLIERS—How do you propose to allocate the £250?

Mr CHALMERS—In the different Show districts.

Rev. Mr GILLESPIE stated that hitherto it had been the habit of the Society to give £100 or £150 for stallions for the Show district. That was to be given in the future, but not in the same way as in the past. It was not to be given specially in the Show district. This year it was proposed to give grants amounting to £210 for this purpose.

The CHAIRMAN pointed out that as Mr Chalmers had not given notice of his motion, it was incompetent.

Mr E. A. STUART GRAY of Gray and Kinfauns said that Galloway and Ayrshire cattle were out of their place in Perthshire, as was seen by the small number of entries in these classes at the last Show in Perth.

On a vote being taken, the action of the Directors was approved of by a large majority, only 9 voting for the amendment.

THE LATE SECRETARY OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.—On the proposal of the Duke of Buccleuch, a motion was passed expressing their feelings of condolence with the Royal Agricultural Society of England on the very severe loss it had sustained through the death of their secretary, Mr H. M. Jenkins.

REPORT ON PLEURO-PNEUMONIA.—Mr HOPE, East Barns, convener of the Veterinary Department, submitted the report of the Committee on Pleuro-Pneumonia. It stated that in July last a letter was received from the Privy Council, and relative correspondence which had taken place between the Veterinary Department of the Privy Council and the Local Authority of the burgh of Edinburgh, with reference to the repeated exposure of cattle affected with pleuro-pneumonia in the public sale yards in the burgh, and the failure of the local authority to institute legal proceedings. The documents were carefully considered by the committee, but they were of opinion that they had no power in the matter. They regretted to learn that the working of the Act was so slackly carried out by the local authorities, and urged the Privy Council that the rules regarding prosecutions should be more strict. At the same time, the committee urged the Privy Council to institute exhaustive experiments as to the value of inoculation in suppressing the disease. The steps taken with regard to the importation of Irish cattle were detailed in the report.

Mr STIRLING of Kippendavie said, with reference to the deputation to be sent to Ireland, it would be in the recollection of all the members of the Society that that experiment had already been tried. There was some time ago a conference of Scotch Local Authorities, and a deputation was sent by them to Ireland on this subject. The deputation was very well received in Dublin, and its views were most carefully listened to by the Lord-Lieutenant, but he ventured to say that, so far as his knowledge went, they had not got much further. He would say that, instead of sending a deputation to Ireland, that Society should approach the Privy Council in London, and there exert its utmost influence to have this matter dealt with. The Privy Council had been asked to give a direct answer to one or two questions which concerned them very closely, and up to this time they had declined to do so. As to one of these questions, he stated that if there was pleuro in the county the local authorities had the right to prevent cattle being brought from any other county in Scotland, while they were subjected to the Irish landing their cattle at Greenock and sending them over the country, whether the authorities wished or not. They ought to get a distinct answer from the Privy Council on that point.

Mr MAXWELL, yr. of Munches, said with reference to inoculation that many local authorities would not recognise it, and it appeared to the committee that experiments should be conducted to show whether inoculation was a good system to be pursued in this country. Mr Stirling had touched the whole question when he spoke of their relation to Irish cattle. So long as they had not power to prevent the landing of Irish cattle in Scotland, most of the local authorities would, he was sure, consider it quite useless on their part to attempt to stamp out pleuro, because they had no confidence whatever that animals landed from Ireland were not affected with disease. The Dublin Privy Council had, in answer to a communication made to them, stated that the majority of their inspectors were properly qualified veterinary surgeons, and that only thirty-seven inspectors were not properly qualified veterinary surgeons. In that state of affairs, they could not put very much trust in any certificate they might receive from any such inspectors, and he thought the Society should back up the Board in making very strong representations to the Privy Council with regard to this matter.

Mr STIRLING pointed out that the facts regarding the Irish veterinary inspectors were known to the Scottish Central Authority three years ago, and they were not a bit better yet.

The Rev. Mr GILLESPIE said they should not lose a single day in approaching the Privy Council in the strongest way possible. Allusion had been made to the fact that the Irish authorities had intimated their intention of appointing a commission to inquire into the whole matter. That intimation was made in the first week of December, and, so far as he had learned, not one step further had been taken. Unless they took action immediately nothing effective could be done until the spring trade in cattle was opened, and he therefore thought the Society should, by every means in their power, impress upon the Privy Council the necessity of having this, and all other matters to which allusion had been made, carried out.

Mr SCOTT DUNGEON thought they should make a representation to the Secretary for Scotland, who would, no doubt, use every effort to have the views of the Scotch farmers, through the Society, brought to bear on the subject.

Principal WILLIAMS, of the New Veterinary College, Edinburgh, thought if the law were more stringently enforced pleuro would be stamped out just as foot-and-mouth disease had been. Pleuro came from the north of England as well as from Ireland. In England there was only one inspector for each county. He would be inclined to make every veterinary surgeon an inspector. With regard to inoculation, he was thoroughly of opinion that an experiment on a large scale should be made at the expense of the Government, in order that an end might be put to differences of opinion on the subject.

Professor M'FADYEAN, Veterinary College, Edinburgh, pointed out that inoculation on a large scale had been tried in the Netherlands three years ago, and had failed. He would like to know if the experiment which it was proposed to make would be practised in a different method from that followed in the Netherlands.

The report was then adopted.

CHAIR OF AGRICULTURE AND AGRICULTURAL EDUCATION.—The Rev. JOHN GILLESPIE, in the absence of Mr Mackenzie of Portmore, gave in the report of the Committee on the Chair of Agriculture and Agricultural Education. The report stated that the subject of the Chair of Agriculture was brought before the special Committee on Agricultural Education, as well as the Directors on the 5th inst., when it was unanimously resolved to continue the grant for another year on the same conditions as last year. The report then dealt with the second subject—the Chemical Department and Agricultural Education generally—and gave the resolutions adopted at the various meetings of the committee that had been held. At a meeting held on the 5th inst., there was submitted a communication from the Senatus of the University of Edinburgh as to the curriculum of agricultural education, being a reply by that body to a request by this Society to state in detail the means which the University are prepared to supply for enabling students to obtain the information necessary for the degree of Bachelor of Science in Agriculture, and also to point out in what way this Society can be of assistance. The committee observed that the principal feature of this scheme was a proposal that this Society should join the University in applying to Government for an annual contribution towards a lectureship in the University of Edinburgh on the application of chemistry to agriculture, and should support the request by the promise of an annual contribution of £150. It was also stated that in the event of an application being successful, the University would cordially desire that this Society should have a voice in the election of a lecturer. The committee were of opinion that if the proposal be entertained, it would be just that the appointment should rest with those who provide the funds, subject to the approval of the University. It was remitted to a sub-committee—consisting of Mr Elliott Lockhart, Rev. John Gillespie, Mr Scott Dudgeon, Mr McQueen, and the Chairman—to draw up a detailed scheme on the lines of the report of the committee of 1st December 1886, as soon as possible, for the approval of the Board, and with a view to an application to Government for subsidies in aid of agricultural education.

Mr HEDLEY SMITH, Whittinghame, said he regretted that what had occurred had lost to the Directors the privilege of becoming patrons and guides to the Chair of Agriculture. They should have supported Professor Wallace from the first, while it seemed last year that the grant was wrung from the Directors. He knew that Professor Wallace had given offence by giving a scheme of lectures that he advised the students to attend. He was not aware that the Professor had given offence to his own colleagues. He did not blame Professor Wallace, as he felt he must have had the cold shoulder of the Directors turned towards him. The lines on which Professor Wallace had gone was the only system that would succeed in Scotland. He complained of the delay that had occurred in regard to the matter.

The Rev. JOHN GILLESPIE said he quite concurred that the delay was extremely to be regretted, but there were many obstacles in the way. The University had not been without its share in the cause of the delay. He didn't wish to blame them, as he believed they would have sufficient reasons for it. They had been waiting on the University, and the University had been waiting on them. It was very desirable that whatever scheme should be set up eventually, it should be a wrung and a good scheme. The idea was that they should go to the Government for a subsidy for agricultural education. They might fail, but they would have at all events called attention to the matter, and the authorities might ultimately see their way to give their support to agricultural education.

Mr VILLIERS said that part of the delay had been on account of the probability of a certain bill being brought before Parliament.

CHEMICAL DEPARTMENT.—Dr AITKEN read the report on the experiments carried out at Pumphreston, and on analyses conducted for the Society.

Mr FERGUSON, Perth, said he thought they should not deal with the values of manures.

Dr AITKEN asked whether the gentleman who had just spoken was connected with the manure trade.

Mr FERGUSON said he was connected with it.

Dr AITKEN said that in their inquiries they had nothing to do with assessing the market price.

PROPOSED EXTENSION OF THE AREA OF THE SOCIETY.—Mr HENDERSON said that Mr Scott Dudgeon had left, and he had asked him to propose the following motion in

his stead :—"That No. 7 Bye-Law be altered as follows :—After the words 'general meeting' insert, 'members of the Society resident in the county of Northumberland shall be considered as included in the Kelso Show District, and members resident in the county of Cumberland shall be considered as included in the Dumfries Show District.'"

Dr SHIBRA GIBB, Boon, seconded the motion.

Mr VILLIERS said that this matter had come up too suddenly before the Board. The proposal, if carried out, would make a considerable difference in the electorate, and it ought to be well considered before such a measure was forced upon them. He had now to move for delay.

Mr ELLIOT, yr. of Wolfelee, said that as a representative of the Kelso district he had much pleasure in seconding Mr Villiers' amendment.

Mr LITTLE, Tower of Sark, said that for forty-eight years he had lived within half a mile of Scotland, and yet he did not approve of the proposal.

Mr HENDERSON said he would agree to delay the matter.

DISTRICT COMPETITIONS.—Mr VILLIERS made a statement regarding the proposed new regulations as to district competitions, and the report was received. The reports on District Competitions, Cottages and Gardens, the Dairy Departments, and the Botanical report were read.

HIGHLAND INDUSTRIES AND FISHERIES.—Sir JAMES H. GIBSON-CRAIG, Bart., said—As Convener of the Committee on Highland Industries and Fisheries, I have to report that on the occasion of the late Show at Dumfries, an interesting collection of models of fish-hatching apparatus were exhibited by Mr Armistead, of the Solway Fishery. At the Perth Show in July next, the Directors have offered prizes for best collection of inland fishing tackle; best collection of kippered and preserved salmon; best method of sending salmon and trout fresh to southern markets; and best method of transporting live fry or young fish. It will be in the recollection of members that a vote of £50 was passed at the general meeting in June last towards defraying the expenses of an expedition, to be conducted by Mr Anderson Smith, Ledaig, along the west coast, as to food for fishes, and the localities in which fishing industry might be most successfully prosecuted, on condition that Mr Anderson Smith would write a special report for the Society on the subject. The investigation took place during the past summer and autumn, and extended over the months of July, August, and September; and Mr Anderson Smith has since lodged an interesting report, which, with other papers in connection with this department, will appear in the next volume of the Society's *Transactions*.

PREMIUMS AWARDED FOR REPORTS.—Mr MENZIES, in the absence of Mr Irvine of Drum, reported as to the premiums that had been awarded.

"TRANSACTIONS" FOR 1887.—Mr MENZIES reported that the *Transactions* would for the current year contain the reports for which premiums had been announced, as well as papers on the west coast fisheries, on insects most injurious to forest trees, on the Dumfries Show, and reports of the implement trials, on the chemical department, the cereal and other crops of Scotland, and other official documents.

PRESENTATION OF A PICTURE.—The SECRETARY intimated that a picture of the first-prize pen of blackfaced gimmers, exhibited by the Duke of Argyll at the Society's Show at Dumfries, painted by Mr Stevenson, Edinburgh, had been presented by his Grace to the Society. The picture would be exhibited in the Hall.

It was agreed that the Secretary be requested to return the thanks of the Society to the Duke of Argyll for his gift.

On the motion of Mr VILLIERS, a vote of thanks was awarded to the Chairman, and the proceedings, which had lasted about three hours and a half, then terminated.

PREMIUMS AWARDED BY THE SOCIETY IN 1886-7.

I.—REPORTS, 1887.

1. Alexander Macdonald, Sub-Editor, <i>North British Agriculturist</i> , Edinburgh, for a Report on the Agriculture of the County of Renfrew,	£25	0	0
2. William Watt, Albert Street, Aberdeen, for a Report on the Collection of Herring and other Fish from the West Coast,	5	0	0
3. William Watt, Albert Street, Aberdeen, for a Report on Preventing the Glutting of Markets and the Distribution of Herrings and other Fish,	5	0	0
4. C. Y. Michie, Forester, Cullen House, Cullen, for a Report on the Diseases of the Larch,	5	0	0
	<u>£40</u>	<u>0</u>	<u>0</u>

II.—ABERDEEN SHOW, 1885.

Thomas Corbett, Shrewsbury, 1st Prize, Autumn Cultivator,	£15	0	0
Thomas Corbett, Shrewsbury, 2nd Prize, do,	10	0	0
George Sellar & Son, Huntly, 3rd Prize, do,	5	0	0
Thomas Corbett, Shrewsbury, 1st Prize, Spring Cultivator,	20	0	0
William Webster, Millurex, Fyvie, 2nd Prize, do,	10	0	0
	<u>£60</u>	<u>0</u>	<u>0</u>

III.—DUMFRIES SHOW, 1886.

CLASS I—CATTLE.

SHORTHORN.

SECTION 1. BULL, calved before 1st January 1884.

1. William Handley, Green Head, Milnthorpe, "Royal Ingram" (50374),	£20	0	0	
2. John Law, New Kelp, Whitehouse, Aberdeenshire, "Reformer,"	10	0	0	
3. Robert Thompson, Inglewood, Penrith, "Mountain Chief 2nd," (50080),	5	0	0	
Breeder of Best Bull—William Handley, Green Head,	Silver Medal,	0	14	0

SECTION 2. BULL, calved on or after 1st January 1884.

1. William Handley, Green Head, Milnthorpe, "Golden Treasure" (51346),	20	0	0
2. John Robson, Newton, Bellingham, "King John" (51472),	10	0	0
3. James Jardine, Dryfeholm, Lockerbie, "Earl of Banbury 10th" (51173),	5	0	0

SECTION 3. BULL, calved on or after 1st January 1885.

1. William Handley, Green Head, Milnthorpe, Westmoreland, "Royal Hovingham,"	15	0	0
2. Representatives of late James Bruce, Burnside, Fochabers, "Goldfinder's Hen,"	8	0	0
3. Robert Paterson of Robghill Tower, Ecclefechan, "The Marshall,"	4	0	0
H. C., Robert Thompson, Inglewood, Penrith, "Inglewood Beau."			

SECTION 4. COW, of any Age.

1. Robert Thompson, Inglewood, Penrith, "Inglewood Belle,"	15	0	0
2. Hon. Bernard C. Maxwell, Kaeside, Melrose, "Lady Graceful,"	8	0	0
3. Andrew Johnstone of Hallsheath, Lockerbie, "Early Morn,"	4	0	0

Carry forward, £124 14 0

Brought forward, £124 14 0

SECTION 5. HEIFER, calved on or after 1st January 1884.

1. Representatives of late James Bruce, Burnside, Fochabers, "Fanny B. 26th,"	10	0	0
2. Robert Thompson, Inglewood, Penrith, "Molly Millicent,"	5	0	0
3. Representatives of late James Bruce, Burnside, Fochabers, "Fanny B. 31st,"	3	0	0
C., Trustees of Sir R. G. Musgrave, Bart., Eden Hall, Penrith, "Diamond 13th."			

SECTION 6. HEIFER, calved on or after 1st January 1885.

1. James A. Gordon of Arabella, Nigg Station, "Roan Princess,"	10	0	0
2. Representatives of late James Bruce, Burnside, Fochabers, "Fatima,"	5	0	0
3. James A. Gordon of Arabella, Nigg Station, "Lady of the Lake,"	3	0	0
C., Representatives of the late James Bruce, Burnside, Fochabers, "Frances."			

AYRSHIRE.

SECTION 7. BULL, calved before 1st January 1884.

1. M. J. Stewart of Southwick, M.P., Dumfries, "Hover a Blink" (392),	20	0	0
2. Matthew Templeton, Drumore, Kirkcudbright, "Stirling Castle" (963),	10	0	0
3. M. J. Stewart of Southwick, M.P., Dumfries, "White Prince" (309),	5	0	0
Breeder of Best Bull—Thomas Hutchison, McCosilton, Stair, . . . Silver Medal,	0	14	0

SECTION 8. BULL, calved on or after 1st January 1884.

1. Robert Osborne, Drumjoan, Ochiltree, "Cock a Bendie" (1204),	15	0	0
2. Robert Wardrop, Garlaff, Cumnock, "Gallant Lad" (1286),	8	0	0

SECTION 9. BULL, calved on or after 1st January 1885.

1. James Wallace, Piperhill, Ochiltree, "Regent Morton of Piperhill" (1234),	10	0	0
2. Robert Wardrop, Garlaff, Cumnock, "Ayrshire Lad,"	5	0	0
3. T. N. McDowall, Auchtralure, Stranraer, "Royal Oak,"	3	0	0

SECTION 10. COW in Milk, of any Age.

1. James Howie, Burnhouses, Galston, "Fanny 3rd of Burnhouses" (3123),	15	0	0
2. Robert Wilson, Manswrae, Kilbarchan, "Rosie 7th" (1503),	8	0	0
3. Robert Wilson, Manswrae, Kilbarchan, "Flirt 2nd" (1137),	4	0	0
V. H. C., J. W. Hutchison, of Edingham, Maldenholm, Dalbeattie, "Mascotte" (4653). H. C., J. W. Hutchison of Edingham, Maldenholm, Dalbeattie, "Primrose 2nd of Maldenholm" (4652). C., James Hunter, Hardlawbank, Dumfries.			

SECTION 11. COW in Calf, of any Age, or HEIFER in Calf, calved before 1st January 1884.

1. Robert Wilson, Manswrae, Kilbarchan, "Brown Bess" (3725),	15	0	0
2. John Hendry, Bountree, Lochwinnoch, "Princess 1st" (2174),	8	0	0
3. M. J. Stewart of Southwick, M.P., Dumfries, "Blakehouse" (3646),	4	0	0

SECTION 12. HEIFER, calved on or after 1st January 1884.

1. Matthew Templeton, Drumore, Kirkcudbright, "White Flower of Ahticane" (4293),	10	0	0
2. M. J. Stewart of Southwick, M.P., Dumfries, "Lady Louise 2nd" (4082),	5	0	0
3. James Hamilton, Woolfords, Carnwath, . . .	3	0	0
V. H. C., And. Allan, Munnoch, Dairy, Ayrshire, "Snowflake of Munnoch" (4201). H. C., M. J. Stewart of Southwick, M.P., Dumfries, "Princess 2nd" (2667). C., Matthew Templeton, Drumore, Kirkcudbright, "Mary 2nd of Drumore" (3201).			

SECTION 13. HEIFER, calved on or after 1st January 1885.

1. W. P. Gilmour, Balmangan, Kirkcudbright, "Mayflower of Balmangan,"	8	0	0
2. Matthew Templeton, Drumore, Kirkcudbright, "Mary 3rd of Drumore" (4465),	5	0	0
3. Robert Wardrop, Garlaff, Cumnock, "Mary Jane 2nd,"	3	0	0
V. H. C., T. N. McDowall, Auchtralure, Stranraer, "Mabel 2nd." H. C., T. N. McDowall, Auchtralure, Stranraer, "Jenny 2nd." C., W. J. P. Beattie, Newbie Villa, Annan, "Eva 4th of Drumlanrig."			

Carry forward, £225 8 0

Brought forward. £325 8 0

GALLOWAY.

SECTION 14. BULL, calved before 1st January 1884.

1. Sir Robert Jardine of Castlemilk, Bart., M.P., "Mosstrooper of Drumlanrig" (1672),	20	0	0
2. Robert Jefferson, Rothersyke, Egremont, Carnforth, "Queensberry 3rd of Drumlanrig" (1673),	10	0	0
3. Alex. McCowan of Newtonards, Dumfries, "Statesman 2nd of Drumlanrig" (1786),	5	0	0
4. The Duke of Buccleuch and Queensberry, K.T., "Kinsman 2nd of Drumlanrig" (1790),	3	0	0
Breeder of Best Bull—The late Duke of Buccleuch, K.G., Drumlanrig, Silver Medal,	0	14	0
V. H. C., Sir Robert Jardine, Bart., M.P., Lannick Castle, Doune, "Premier of Castlemilk" (1842). H. C., Alexander McCowan of Newtonards, Dumfries, "Craighton" (2640). C., John Graham of Shaw, Lockerbie, "John Highlandman 3rd" (1887).			

SECTION 15. BULL, calved on or after 1st January 1884.

1. Sir Robert Jardine of Castlemilk, Bart., M.P., "Roger of Oakbank" (3390),	20	0	0
2. Sir Robert Jardine, Bart., M.P., Lannick Castle, Doune, "Paymaster" (3399),	10	0	0
3. The Duke of Buccleuch and Queensberry, K.T., Drumlanrig, Thornhill, "Netherlea" (3335),	5	0	0
4. Robert Beatty, Howend, Longtown, "Glengairry of Tarkerrow" (3531),	3	0	0
V. H. C., Robert Jefferson, Rothersyke, Egremont, Carnforth, "Corsair" (3332). H. C. J. & S. Nilsson, Lahdlaugh, Dalbeattie, "Charloteer" (3565). C., James Graham, Longburgh House, Burgh-by-Sands, Carlisle, "Deloraine 5th" (3322).			

SECTION 16. BULL, calved on or after 1st January 1885.

1. F. E. Villiers, Closeburn Hall, Thornhill, "Dictator" (3845),	15	0	0
2. Andrew Montgomery of Netherhall, Castle-Douglas, "Liberator" (3850),	8	0	0
3. F. E. Villiers, Closeburn Hall, Thornhill, "Vale Royal of Closeburn" (3804),	4	0	0
4. The Duke of Buccleuch and Queensberry, K.T., Drumlanrig, "British King,"	2	0	0
V. H. C., Sir Robert Jardine of Castlemilk, Bart., M.P., Lockerbie, "Eminence" (3927). H. C., John Bell of Minsca, Lockerbie, "Sir William Graham of Balgair" (4031). C., Sir Robert Jardine of Castlemilk, Bart., M.P., Lockerbie, "Dalmeny" (4075).			

SECTION 17. COW, calved before 1st January 1883.

1. Sir Robert Jardine of Castlemilk, Bart., M.P., Lockerbie, "Tidy 8th" (4313),	15	0	0
2. Sir Robert Jardine of Castlemilk, Bart., M.P., "Matchless Countess" (7917)	8	0	0
3. Sir Robert Jardine of Castlemilk, Bart., M.P., "Susan of Balg 8th" (4054),	4	0	0
4. Sir Robert Jardine of Castlemilk, Bart., M.P., "Jenny Duke" (3842),	2	0	0
V. H. C., The Duke of Buccleuch and Queensberry, K.T., "Knocklearn of Newtonards" (6512). H. C., Sir Robert Jardine of Castlemilk, M.P., "Susan 1st of Castlemilk" (5500). C., The Duke of Buccleuch and Queensberry, K.T., "Semiramis 3rd of Drumlanrig" (4220).			

SECTION 18. COW, calved after 1st January 1883.

1. Sir Robert Jardine of Castlemilk, Bart., M.P., "Braw Lady" (8803),	15	0	0
2. Sir Robert Jardine of Castlemilk, Bart., M.P., "Tidy Lass" (7997),	8	0	0
3. J. Jardine Paterson of Balgray, Lockerbie, "Hannah 2nd of Balgray" (7044),	4	0	0
4. Sir Robert Jardine of Castlemilk, Bart., M.P., Lockerbie, "Lady Nancy 5th of Castlemilk" (7694),	2	0	0
V. H. C., Robert Jefferson, Rothersyke, Egremont, Carnforth, "Iolanthe" (7009). H. C., Andrew McConchie, Mains of Penninghame, Newton-Stewart, "Matty of Penninghame" (7478).			

SECTION 19. HEIFER, calved on or after 1st January 1884.

1. F. E. Villiers, Closeburn Hall, Thornhill, "Villa" (8185),	10	0	0
2. J. Jardine Paterson of Balgray, Lockerbie, "Hannah 3rd of Balgray" (8184),	3	0	0
3. F. E. Villiers, Closeburn Hall, Thornhill, "Vendetta of Closeburn" (8183),	3	0	0
4. J. Jardine Paterson of Balgray, Lockerbie, "Betha of Balgray" (8185),	1	0	0
V. H. C., Sir Robert Jardine of Castlemilk, Bart., M.P., Lockerbie, "Sweet Secret" (9536). H. C., Sir Robert Jardine of Castlemilk, Bart., M.P., Lockerbie, "Sweet Briar" (9535). C., The Duke of Buccleuch and Queensberry, K.T., "Bessie 4th of Drumlanrig" (8090).			

Carry forward, £208 2 0

Brought forward, £508 2 0

SECTION 20. HEIFER, calved on or after 1st January 1885.

1. Sir Robert Jardine of Castlemilk, Bart., M.P., Lockerbie, "Mignonette" (9542),	10	0	0
2. J. Jardine Paterson of Balgray, Lockerbie, "Bertha 2nd of Balgray" (9164),	5	0	0
3. F. E. Villiers, Closeburn Hall, Thornton, "Varina of Closeburn" (8949),	3	0	0
4. Sir Robert Jardine of Castlemilk, Bart., M.P., Lockerbie, "Lady Soncy 6th" (9126),	1	0	0
V. H. C., Sir Robert Jardine of Castlemilk, Bart., M.P., Lockerbie, "Jenny Duke 4th of Castlemilk" (9119). H. C., William A. M'Turk, Barlae, Dalry, Galloway, "Bridget of Barlae" (9361). C., Sir Robert Jardine of Castlemilk, Bart., M.P., Lockerbie, "Mistletoe" (9543).			

SECTION 21. FAMILY GROUP—Cow and Three of her descendants (Male or Female) in the Female line, Oxen excluded, bred by, or the property of, the Exhibitor.

1. Sir Robert Jardine of Castlemilk, Bart., M.P., Lockerbie,	20	0	0
2. Sir Robert Jardine of Castlemilk, Bart., M.P., Lockerbie,	10	0	0
3. Sir Robert Jardine of Castlemilk, Bart., M.P., Lockerbie,	5	0	0

ABERDEEN-ANGUS.

SECTION 22. BULL, calved before 1st December 1883.

1. James Argo, Cairdseat, Udry, "Black Rod" (2549),	20	0	0
2. Sir George Macpherson Grant, Bart., Ballindalloch, "Hlad" (2943),	10	0	0
3. John Charles Cuninghame of Foyers, Inverness, "Ajax" (2438),	5	0	0
Breeder of Best Bull—E. O. Farquharson of Haughton, Alford, Silver Medal,	0	14	0
V. H. C., The Earl of Airlie, Cortachy Castle, Kirriemuir, "Folkestone" (4673).			

SECTION 23. BULL, calved on or after 1st December 1883.

1. The Earl of Airlie, Cortachy Castle, Kirriemuir, "Poole" (4939),	20	0	0
2. C. Stephenson, Balliol College Farm, Long Benton, Newcastle, "Evander" (3717),	10	0	0
3. Arthur Egginton, South Ella, Hull, "Fuschius" (3762),	5	0	0
V. H. C., The Marquis of Huntly, Aboyne Castle, "Frederick the Great" (4680).			
H. C., Thomas Smith, Powrie, Dundee, "Rover of Powrie" (4991).			

SECTION 24. BULL, calved on or after 1st December 1884.

1. Lord Tweedmouth, Gulsachan, Beaulieu "Cash" (4558),	15	0	0
2. George Reid, Clinterty, Blackburn, Aberdeen, "Clan Duff" (4573),	8	0	0
3. Arthur Egginton, South Ella, Hull, "Corsican" (4590),	4	0	0
V. H. C., George Smith Grant, Anchorachan, Glenlivet, Ballindalloch, "Nereus" (4905). H. C., George Cran, Morlich, Inverkindie, "Morlich Jim."			

SECTION 25. COW, of any Age.

1. Sir George Macpherson Grant of Ballindalloch, Bart., "Pride of the Tervie" (7060),	15	0	0
2. Thomas Smith, Powrie, Dundee, "May 8th" (7750),	8	0	0
3. Thomas Smith, Powrie, Dundee, "Ruby 5th of Powrie" (6090),	4	0	0
V. H. C., Sir George Macpherson Grant of Ballindalloch, Bart., "Blushing Maid" (7043). H. C., C. Stephenson, Balliol College Farm, Long Benton, Newcastle, "Young Bellona" (5630). C., W. B. Greenfield, Beechwood Park, Dunstable, "Griselda" (3877).			

SECTION 26. HEIFER, calved on or after 1st December 1883.

1. C. Stephenson, Balliol College Farm, Long Benton, Newcastle, "Lady Victorine" (8236),	10	0	0
2. The Marquis of Huntly, Aboyne Castle, "St Anna" (8768),	5	0	0
3. The Earl of Strathmore, Glamis Castle, Glamis, "Satanella" (9341),	3	0	0
V. H. C., The Earl of Airlie, Cortachy Castle, Kirriemuir, "Attraction" (9524). H. C., The Earl of Strathmore, Glamis Castle, Glamis, "Veronica" (9335). C., Thomas Smith, Powrie, Dundee, "Naomi 3rd of Powrie" (10551). C., The Earl of Strathmore, Glamis Castle, Glamis, "Blueberry" (9342).			

Carry forward, £704 16 0

Brought forward, £704 16 0

SECTION 27. HEIFER, calved on or after 1st December 1884

1 The Earl of Strathmore & Glamis Castle, Glamis, "Buttercup 2nd" (10653),	10	0	0
2 C Stephenson, Balliol College Farm, Long Benton, Newcastle, "Pride of Englishman" (10580),	5	0	0
3 The Earl of Aulde, Cortachy Castle, Kirmemur, "Penelope,"	3	0	0
V H C, Thomas Smith, Powrie, Dundee, "Ruby 13th of Powrie" (10557). H C, James Argo Cardseat, Uday, Aberdeen, "Monomano" (9561). C, The Hon Lulph Ogilvy, Cortachy, Kirmemur, "Cynthia Grace" (10567) C, Sir George Macpherson Grant, Bart, Ballindalloch Castle, "Rhoda"			

HIGHLAND.

SECTION 28. BULL, calved before 1st January 1884

1. John Stewart of Ensay, Harris, "Tearlach Og,"	20	0	0
2 The Duke of Athole, K T, Blair Castle, Blair Athole, "Rosie" (456),	10	0	0
3 The Duke of Athole, K T, Blair Castle, Blair Athole, "Calum Odhar" (79),	5	0	0
Breeder of Best Bull—John Stewart of Ensay, Harris, Silver Medal,	0	14	0
V. H. C, John Campbell of Kilberry, Argyllshire, "Kilchamaig Buidhe" (325)			
H. C, Sir Donald Currie of Garth and Glenlyon, M. P, Fortingall, "Calum Ruadh of Garth" (91) C, William Dalziel Mackenzie of Farr, Inverness, "Iain Donn" (314).			

SECTION 29. BULL, calved on or after 1st January 1884

1 John Malcolm of Poltalloch, Lochgiphead, "Achari Mhor,"	20	0	0
2 Dugald Cleik, Duntanachan, Tainmilt, "Rob Roy of Duntanachan,"	10	0	0
3 William Macdonald, Ardsheal, Ballachulish, "Am Freacadan Dubh,"	5	0	0

SECTION 30. COW, of any Age

1 John Malcolm of Poltalloch, Lochgiphead, "Mhaldag,"	15	0	0
2 John Stewart of Ensay, Harris, "Rubhu Lurach,"	8	0	0
3 John Stewart of Ensay, Harris, "Donnach Riabhach,"	4	0	0
V H C, John Malcolm of Poltalloch, "Anaiseannach" H C, James Duncan of Benmore, Glensanda, Oban, "Mairi Odhar."			

SECTION 31. HEIFER, calved on or after 1st January 1883.

1 John Malcolm of Poltalloch, Lochgiphead, "Bhuidhe Mhor,"	10	0	0
2 James Duncan of Benmore, Kilmun, "Phrosag 7th,"	5	0	0
3. John Malcolm of Poltalloch, Lochgiphead, "Cuallean,"	3	0	0
V H C, The Duke of Sutherland, K G, Shunness, Lurg, "Beauty" H C, Alexander Macdonald, Balranald, Lochmaddy "Niseag" C, Alexander Macdonald, Balranald, "Lerag"			

SECTION 32. HEIFER, calved on or after 1st January 1884

1 The Duke of Sutherland, K. G, Shunness, Lurg,	10	0	0
2 John Malcolm of Poltalloch, Lochgiphead, "Souphrag,"	5	0	0
3 Alexander Macdonald, Balranald, Lochmaddy, "Moiag,"	3	0	0
V. H. C, The Duke of Argyll, K. G, Ballymenach, Campbelltown, "Sheila" H C, John Malcolm of Poltalloch, Lochgiphead, "Riabhach E-didh." C, Alexander Macdonald, Balranald, Lochmaddy, "Sonissag"			

EXTRA CATTLE.

Very Highly Commended.

F. E Vihers, Closeburn Hall, Thornhill, Gallovay Oy,	5	0	0
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Highly Commended

Alexander Macdonald, Balranald, Lochmaddy, Highland Ox,	3	0	0
Andrew Johnstone of Halleaths, Lockerbie, Jersey Bull, "Shepherd,"	3	0	0
Andrew Johnstone of Halleaths, Lockerbie, Jersey Cow, "Golden Bloom,"	3	0	0

Commended

Alexander Macdonald, Balranald, Lochmaddy, Highland Ox,	Silver Medal,	0	14	0
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£871 4 0

CLASS II.—HORSES

FOR AGRICULTURAL PURPOSES.

SECTION 1. STALLION, foaled before 1st January 1883.

1. Andrew Montgomery of Nether Hall, Castle-Douglas, "Macfarlane" (3988),	£25	0	0
2. David Riddell, Blackhall, Paisley, "Prince of Avondale,"	15	0	0
3. John Macdonald, Porterfield, Renfrew, "Lord Hopetoun" (2968),	10	0	0
4. R. & J. Findlay, Springhill, Baillieston, "Springhill Darnley" (3439),	5	0	0
Breeder of Best Stallion—Andrew Montgomery of Nether Hall, Silver Medal,	0	14	9
V. H. C., The Marquis of Londonderry, Seaham Hall, Seaham Harbour, "Castlereagh."			
H. C., James Crawford, Brydekirk Mains, Annan, "Charmer" (3014).			
R. & J. Findlay, Springhill, Baillieston, Glasgow, "Master of Blantyre" (2383).			

SECTION 2. ENTIRE COLT, foaled on or after 1st January 1883.

1. John Pollock, Greenlaw, Newton Mearns, "Flashwood" (3604),	20	0	0
2. Peter Crawford, Burnfoot, Strathblane, "Prince of Albyn,"	15	0	0
3. Alexander McCowan of Newtonairds, Dumfries, "Prince of Airds" (4641),	10	0	0
4. Andrew Bruce, Jordanstone, Meigs, "Pickwick" (3835),	5	0	0
V. H. C., George Rodger, Newton Bank, Preston Brook, "Little Jock Elliott" (3768),			
H. C., David Riddell, Blackhall, Paisley, "Ardnacraig."			

SECTION 3. ENTIRE COLT, foaled on or after 1st January 1884.

1. John Marr, Cairnbrogie, Old Meldrum, "Cairnbrogie Stamp" (4274),	20	0	0
2. William Montgomery, Banks, Kirkcubright, "Macneil,"	10	0	0
3. David Riddell, Blackhall, Paisley, "Newtonairds,"	4	0	0
4. Andrew Montgomery of Netherhall, Castle-Douglas, "Macaulan" (4552),	2	0	0
V. H. C., The Marquis of Londonderry, Seaham Hall, Seaham Harbour, "Clifton."			
H. C., Lieut.-Colonel Patrick Stirling of Kippendavie, Dumblane, "Knight Errant" (4483).			
G., James Crawford, Brydekirk Mains, Annan, "Castlemilk."			

SECTION 4. ENTIRE COLT, foaled on or after 1st January 1885.

1. David Riddell, Blackhall, Paisley,	12	0	0
2. Andrew Montgomery of Nether Hall, Castle-Douglas,	7	0	0
3. Andrew Montgomery of Nether Hall, Castle-Douglas, "MacKay,"	4	0	0
4. Peter Crawford, Burnfoot, Strathblane, "Self-Esteem,"	2	0	0
V. H. C., James Lockhart, Mains of Airies, Stranraer, "Darnley's Hero." H. C.,			
Peter Crawford, Burnfoot, Strathblane, "Prince Leopold." C., James Mc'Nab,			
Glenochil, Menzies, "McVicar" (3235).			

SECTION 5. MARE (with Foal at foot), foaled before 1st January 1883.

1. David Riddell, Blackhall, Paisley, "Minnie,"	25	0	0
2. John Gilmour, Montrave, Leven, "Kate of Banks" (2612),	15	0	0
3. R. & J. Findlay, Springhill, Baillieston, Glasgow, "Chrystal,"	10	0	0
4. Mark J. Stewart of Southwick, M.P., Dumfries, "Bessie" (1498),	5	0	0
V. H. C., Lieut.-Col. Patrick Stirling of Kippendavie, Dumblane, "Beatrice." H. C.,			
The Earl of Galloway, Galloway House, "Queen of the Forest."			

SECTION 6. MARE (in Foal), foaled before 1st January 1883.

1. John Gilmour, Montrave, Leven, Fife, "Moss Rose,"	20	0	0
2. Sir Michael R. Shaw-Stewart, Bart., Ardgowan, Greenock, "Toplady,"	10	0	0
3. Richard B. Brockbank, Crosby, Maryport, "Trim,"	5	0	0
4. Alexander McCowan of Newtonairds, Dumfries, "Lucky Lass,"	3	0	0
V. H. C., The Marquis of Londonderry, Seaham Hall, "Dora" (4758). H. C., James			
Crawford, Brydekirk Mains, Annan, "Lily Agnes" (4524).			

 Carry forward, £250 14 0

Brought forward, £239 14 0

SECTION 7. FILLY, foaled on or after 1st January 1883.

1. John Gilmour, Montrave, Leven, Fife, "Lass o' Gowrie,"	10	0	0
2. Andrew Mitchell, Barcheskie, Kirkcudbright, "Jenny Lind,"	5	0	0
3. James Crawford, Brydekirk Mains, Annan, "Sally Douglas,"	3	0	0
4. James McNab, Glenochil, Menstrie, "Lady Macbeth" (1601),	2	0	0
V. H. C., A. B. Matthews, Newton-Stewart, "Cinderella."			

SECTION 8. FILLY, foaled on or after 1st January 1884.

1. William Montgomery, Banks, Kirkcudbright, "Laura Lee,"	8	0	0
2. W. H. Lumsden of Balmedie, Aberdeen, "Lady Marjory Erskine,"	4	0	0
3. David McGibbon, Ardnacraig, Campbeltown, "Sunray,"	2	0	0
4. Peter Crawford, Burnfoot, Strathblane, "Nell of Shiell,"	1	0	0
V. H. C., Alexander Baird of Urie, Stonehaven, "Zehnet." H. C., James Picken, Laigh Langleide, Kilmarnock, "Fancy Fair." C., Alexander Baird of Urie, Stonehaven, "Zeynah."			

SECTION 9. FILLY, foaled on or after 1st January 1885.

1. James Lockhart, Mains of Airlie, Stranraer, "Pandora,"	6	0	0
2. David A. Hood, Balgreddan, Kirkcudbright, "Hettie,"	4	0	0
3. John Watson of Earnock, Hamilton, "Rose of Earnock,"	2	0	0
4. Sir M. R. Shaw Stewart, Bart., Airdgowan, Greenock, "Bracelet,"	1	0	0
V. H. C., W. H. Lumsden of Balmedie, Aberdeen, "Mermaid." H. C., Edward Balfour, yr. of Balbirnie, Maikinch, "Miss Alice." C., R. B. Brockbank, Crosby, Maryport, "Lovely."			

SECTION 10. DRAUGHT GELDING, foaled before 1st January 1883.

1. Robert Kerr, Broadwigg, Whitehorn, "Jamie,"	8	0	0
2. J. Jardine Paterson of Balgray, Lockerbie, "Captain,"	4	0	0
V. H. C., James Little, Sark Tower, Canonbie, "Boxer."			

SECTION 11. DRAUGHT GELDING, foaled on or after 1st January 1883.

1. Robert Barbour, Gillfoot, Kirkbean, Dumfries, "Clyde,"	6	0	0
2. William Millar, Lakehead, Gloseburn, Thornhill, "Robin Gray,"	3	0	0

HUNTERS AND ROADSTERS.

SECTION 12. BROOD MARE, with FOAL at foot, suitable for Field.

1. D. J. Bell-Irving, Whitehill, Lockerbie, "Colleen Rue,"	20	0	0
2. John W. Hodgson, Burgh-by-Sands, Carlisle, "Boealls,"	10	0	0
3. James Little, Sark Tower, Canonbie, "Jet,"	5	0	0

SECTION 13. MARE or GELDING, suitable for Field, foaled before 1st January 1883.

1. John Rutherford, Summerhill, Annan (Gelding), "Shamrock,"	20	0	0
2. W. E. Gilmour, Woodbank, Alexandria, N.B. (Gelding), "Walton,"	10	0	0
3. R. W. B. Jardine, Castlemilk, Lockerbie (Gelding), "King of Diamonds,"	5	0	0
V. H. C., W. E. Gilmour, Woodbank, Alexandria, N.B. (Gelding), "Polnoon."			

SECTION 14. MARE or GELDING, suitable for Field, foaled on or after 1st January 1883.

1. D. J. Bell-Irving, Whitehill, Lockerbie (Mare), "Meadow Grass,"	15	0	0
2. John W. J. Paterson, Terrona, Langholm (Gelding), "Stockingnette,"	8	0	0
3. Richard Percival, Burgh-by-Sands, Carlisle (Gelding), "Harmonium,"	4	0	0
V. H. C., William Williamson, Glasson, Burgh-by-Sands, Carlisle (Mare), "Solway Queen."			

Carry forward, £425 14 0

Brought forward, £425 14 0

SECTION 15. MARE or GELDING, suitable for Field, foaled on or after 1st January 1884.

1 John Forrester, Howard House, Warwick Bridge, Carlisle (Gelding), "The Lord o' Warwick,"	10 0 0
2 D J Bell Irving, Whitehill, Lockerbie (Gelding), "Meadow King"	5 0 0
3 William Boyle, 49 Douglas Street, Glasgow (Gelding), "The Secretary,"	3 0 0
V H C, George C Thompson, The Farm, Silloth (Mare), "Princess" H C, John M'Kie of Ernespie, Castle-Douglas (Mare), "Hawthorn"	

SECTION 16 MARE or GELDING, suitable as Hackney

1 John A Beattie, Newbie House, Annan (Mare), "Sunbeam,"	8 0 0
2 Mrs Mackie, Auchencarn, Castle Douglas (Mare), "Silver Belle" (508),	4 0 0
3 William Anderson, Houghton, Carlisle (Gelding), "Redcap,"	2 0 0

SECTION 17 MARE or GELDING, suitable for Driving, 3 years old and upwards

1 J A Mather Eccles House, Thornhill (Mare), "Ladybud" (177),	8 0 0
2 Mrs Mackie, Auchencarn, Castle Douglas (Gelding), "The King,"	4 0 0
3 John Hutchison, Ovgang, Dumfries (Gelding), "Mayflower,"	2 0 0

PONIES

SECTION 18 STALLION, 15 hands and under

1 D T & C, Marton, Auchendunnan Farm, Balloch, "Jupiter,"	6 0 0
2 Sir John Campbell Orde of Kilmory, Bart, Lochgriphead, "Young Sportsman,"	3 0 0

SECTION 19 MARE or GELDING, between 13 and 14½ hands

1 Richard Jackson, Wetherall Abbey, Carlisle (Mare), "Rowena,"	5 0 0
2 John Rutherford, Summerhill, Annan (Gelding), "Shylock,"	3 0 0
3 Mrs Bell, Hallowton, Castle Douglas (Mare), "Polly,"	1 0 0
V H C, Joseph Hope, Dockray, Wigton, Cumberland (Mare), "Telephone" H C, John Hutchison, Ovgang, Dumfries (Mare), "My Queen"	

SECTION 20 MARE or GELDING, between 12 and 13 hands

1 Mrs Mackie, Auchencarn, Castle Douglas (Gelding), "Sir Gibbie,"	6 0 0
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SECTION 21. MARE or GELDING, under 12 hands

1 William Imrie, Rosebank House, Dalbeattie (Mare), "Beauty,"	6 0 0
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SHETLAND PONIES

SECTION 22 STALLION, not exceeding 11 hands

1 The Marquis of Londonderry, Maryfield Farm, Bressay "Odin,"	4 0 0
2 D T & C Maran, Auchendunnan Farm, Balloch, "The Pirate,"	2 0 0

SECTION 23 MARE or GELDING, not exceeding 11 hands

1 The Marquis of Londonderry, Maryfield Farm, Bressay (Mare), "Darling,"	4 0 0
2 David Buttar, Corston, Coupar-Angus (Mare), "Flora,"	2 0 0
3 David Buttar, Corston, Coupar-Angus (Mare), "Violet,"	1 0 0

EXTRA HORSES

Very Highly Commended

E J. Percy, Housenrigg, Aspatria (Thorough-bred Stallion), "Sidual,"	3 0 0
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GRANTS TO HORSE ASSOCIATIONS

10 Districts, at £15 each,	150 0 0
	£670 14 0

CLASS III.—SHEEP.

BLACKFACED.

SECTION 1. TUP, above 1 Shear.

1. Executors of the late Thomas Welsh, Earlsburgh, Moffat,	£12 0 0
2. Charles Howatson of Glenbuck, Glenbuck,	8 0 0
3. Charles Howatson of Glenbuck, Glenbuck,	4 0 0
V. H. C., J. & J. Moffat, Gateside, Sanquhar. H. C., The Duke of Argyll, K.G., Ballymenach, Campbeltown. C., J. & J. Moffat, Gateside, Sanquhar.	

SECTION 2. SHEARLING TUP.

1. Executors of the late Thomas Welsh, Gateside, Sanquhar,	12 0 0
2. John Fleming, Ploughland, Strathaven,	8 0 0
3. Executors of the late Thomas Welsh, Earlsburgh, Moffat,	4 0 0
V. H. C., Charles Howatson of Glenbuck, Glenbuck. H. C., Charles Howatson of Glenbuck, Glenbuck. C., James Hamilton, Woolfords, Carnwath.	

SECTION 3. TUP LAMB.

1. The Duke of Argyll, K.G., Ballymenach, Campbeltown,	5 0 0
2. The Duke of Argyll, K.G., Ballymenach, Campbeltown,	2 0 0
V. H. C., Charles Howatson of Glenbuck, Glenbuck. H. C., John Fleming, Plough- land, Strathaven. C., J. & J. Moffat, Gateside, Sanquhar.	

SECTION 4. Three EWES, above 1 Shear, with their LAMBS at foot.

1. James A. Gordon of Arabella, Nigg Station,	10 0 0
2. The Earl of Stair, K.T., Balker, Castle-Kennedy,	5 0 0
3. James Duncan of Benmore, Kilmun,	2 0 0
V. H. C., The Duke of Argyll, K.G., Ballymenach, Campbeltown. H. C., J. & J. Moffat, Gateside, Sanquhar. C., The Duke of Argyll, K.G., Ballymenach, Campbeltown.	

SECTION 5. Three SHEARLING EWES or GIMMERS.

1. The Duke of Argyll, K.G., Ballymenach, Campbeltown,	10 0 0
2. The Duke of Argyll, K.G., Ballymenach, Campbeltown,	5 0 0
3. The Earl of Stair, K.T., Balker, Castle-Kennedy,	2 0 0
V. H. C., James Hamilton, Woolfords, Carnwath. H. C., The Duke of Argyll, K.G., Ballymenach, Campbeltown. C., James A. Gordon of Arabella, Nigg Station.	

CHEVIOT.

SECTION 6. TUP, above 1 Shear.

1. John A. Johnstone, Archbank, Moffat,	12 0 0
2. John A. Johnstone, Archbank, Moffat,	8 0 0
3. John A. Johnstone, Archbank, Moffat,	4 0 0
V. H. C., John A. Johnstone. H. C., John A. Johnstone. C., John Robson, Newton, Bellingham.	

SECTION 7. SHEARLING TUP.

1. James Moffat, Craick, Hawick,	12 0 0
2. John Robson, Newton, Bellingham,	8 0 0
3. John A. Johnstone, Archbank, Moffat,	4 0 0
V. H. C., John A. Johnstone. H. C., John A. Johnstone. C., Matthew S. McKerrow, Boreland, Southwick, Dumfries.	

SECTION 8. Three EWES, above 1 Shear, with their LAMBS at foot.

1. John A. Johnstone, Archbank, Moffat,	10 0 0
2. John Carruthers, Kirkhill, Moffat,	5 0 0
3. John A. Johnstone, Archbank, Moffat,	2 0 0
V. H. C., John Carruthers, Kirkhill, Moffat. H. C., John Robson, Newton, Bellingham. C., John Robson, Newton, Bellingham.	

Carry forward, £154 0 0

Brought forward, £154 0 0

SECTION 9. Three SHEARLING EWES or GIMMERS.

1. John A. Johnstone, Archbank, Moffat,	10 0 0
2. John Robson, Newton, Bellingham,	5 0 0
3. Matthew S M'Kerrow, Boreland, Southwick, Dumfries,	2 0 0
V. H. C., Jacob Robson, Byrness, Otterburn. H. C., J. P. Laurie, Shieldhill, Lochmaben. C., John Robson, Newton, Bellingham.	

BORDER LEICESTER.

TWEEDDALE GOLD MEDAL, for Best Border Leicester Tup in the Yard, Samuel Jack, Crichton Mains, Dalkeith,	19 6 8
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SECTION 10. TUP, above 1 Shear.

1. Samuel Jack, Crichton Mains, Dalkeith,	12 0 0
2. A. R. Melvin, Bonnington, Wilkieston,	8 0 0
3. Right Hon. A. J. Balfour of Whittinghame, M.P., Prestonkirk,	4 0 0
V. H. C., The Earl of Morton, Dalmahoy, Wilkieston. H. C., D. J. Bell-Irving, Waterside, Ecclefechan. C., The Earl of Dalhousie, Panmure, Carnoustie.	

SECTION 11. SHEARLING TUP.

1. Thomas Clark, Oldhamstocks Mains, Cockburnspath,	12 0 0
2. Samuel Jack, Crichton Mains, Dalkeith,	8 0 0
3. Right Hon. A. J. Balfour of Whittinghame, M.P., Prestonkirk,	4 0 0
V. H. C., Thomas Clark, Oldhamstocks Mains, Cockburnspath. H. C., Right Hon. A. J. Balfour of Whittinghame, M.P., Prestonkirk. C., Thos. Clark, Oldhamstocks Mains, Cockburnspath; A. R. Melvin, Bonnington, Wilkieston; Samuel Jack, Crichton Mains, Dalkeith.	

SECTION 12. Three EWES, above 1 Shear.

1. George Simson, Courthill, Kelso,	10 0 0
2. D. J. Bell-Irving, Waterside, Ecclefechan,	5 0 0

SECTION 13. Three SHEARLING EWES or GIMMERS.

1. Thomas Clark, Oldhamstocks Mains, Cockburnspath,	10 0 0
2. A. R. Melvin, Bonnington, Wilkieston,	5 0 0
3. George Simson, Courthill, Kelso,	2 0 0
V. H. C., The Earl of Morton, Dalmahoy, Wilkieston.	

LONG-WOOLLED OTHER THAN BORDER LEICESTER.

SECTION 14. TUP, above 1 Shear.

1. D. J. Bell-Irving, Waterside, Ecclefechan,	3 0 0
2. D. J. Bell-Irving, Waterside, Ecclefechan,	2 0 0
V. H. C., Robert Smith, Dalffibble, Dumfries. C., Robert Smith, Dalffibble, Dumfries.	

SECTION 15. SHEARLING TUP.

1. William Norman, Hall Bank, Aspatria,	3 0 0
2. D. J. Bell-Irving, Waterside, Ecclefechan,	2 0 0
V. H. C., William Norman, Hall Bank, Aspatria.	

SECTION 16. Three EWES, above 1 Shear.

1. D. J. Bell-Irving, Waterside, Ecclefechan,	3 0 0
2. William Norman, Hall Bank, Aspatria,	2 0 0

SECTION 17. Three SHEARLING EWES or GIMMERS.

1. William Norman, Hall Bank, Aspatria,	3 0 0
2. D. J. Bell-Irving, Waterside, Ecclefechan,	2 0 0
V. H. C., William Norman, Hall Bank, Aspatria. H. C., James Beattie, Newble House, Annan.	

Carry forward, £290 6 8

Brought forward, £290 6 8

SHROPSHIRE.

Given by the Shropshire Sheep Breeders' Association and Flock Book Society:—
 CUP, for the Best Shropshire Tup bred in Scotland by the Exhibitor, David
 Buttar, Corston, Coupar-Angus, 10 0 0

SECTION 18. TUP, above 1 Shear.

- | | |
|---|-------|
| 1. Robert Loder, Whittlebury, Towcester, | 6 0 0 |
| 2. George P. Davidson, Banchory, Kirkcaldy, | 4 0 0 |

SECTION 19. SHEARLING TUP.

- | | |
|---|-------|
| 1. David Buttar, Corston, Coupar-Angus, | 6 0 0 |
| 2. David Buttar, Corston, Coupar-Angus, | 4 0 0 |
| 3. David Buttar, Corston, Coupar-Angus, | 2 0 0 |
- V. H. C., Robert Loder, Whittlebury, Towcester. H. C., The Earl of Strathmore
 Glamis Castle, Glamis. C., David Buttar, Corston, Coupar-Angus.

SECTION 20. Three EWES, above 1 Shear.

- | | |
|---|-------|
| 1. Robert Loder, Whittlebury, Towcester, | 5 0 0 |
| 2. George P. Davidson, Banchory, Kirkcaldy, | 3 0 0 |
| 3. The Earl of Strathmore, Glamis Castle, Glamis, | 2 0 0 |
- V. H. C., David Buttar, Corston, Coupar-Angus. C., Andrew Johnstone of Hal
 heaths, Lockerbie.

SECTION 21. Three SHEARLING EWES or GIMMERS.

- | | |
|---|-------|
| 1. David Buttar, Corston, Coupar-Angus, | 5 0 0 |
| 2. Robert Loder, Whittlebury, Towcester, | 3 0 0 |
| 3. The Earl of Strathmore, Glamis Castle, Glamis, | 2 0 0 |
- H. C., George P. Davidson, Banchory, Kirkcaldy.

SHORT-WOOLLED OTHER THAN SHROPSHIRE.

SECTION 22. TUP, above 1 Shear.

- | | |
|---|-------|
| 1. Frederic Street, Somersham Park, St Ives, Huntingdonshire, | 6 0 0 |
| 2. John Heslitt, Plumpton Hall, Penrith, | 4 0 0 |

SECTION 23. SHEARLING TUP.

- | | |
|---|-------|
| 1. Frederic Street, Somersham Park, St Ives, Huntingdonshire, | 6 0 0 |
| 2. Right Hon. A. J. Balfour of Whittinghame, M.P., Prestonkirk, | 4 0 0 |
| 3. Right Hon. A. J. Balfour of Whittinghame, M.P., Prestonkirk, | 2 0 0 |

SECTION 24. Three EWES, above 1 Shear.

- | | |
|---|-------|
| 1. James Beattie, Newbie House, Annan, | 5 0 0 |
| 2. Right Hon. A. J. Balfour of Whittinghame, M.P., Prestonkirk, | 3 0 0 |

SECTION 25. Three SHEARLING EWES or GIMMERS.

- | | |
|---|-------|
| 1. Frederic Street, Somersham Park, St Ives, Huntingdonshire, | 5 0 0 |
| 2. The Right Hon. A. J. Balfour of Whittinghame, M.P., Prestonkirk, | 3 0 0 |

HALF-BRED.

SECTION 26. TUP, above 1 Shear.

- | | |
|---|-------|
| 1. Thomas Elliot, Blackhaugh, Galashiels, | 3 0 0 |
| 2. Thomas Elliot, Blackhaugh, Galashiels, | 2 0 0 |
| 3. William Lyal, Caddonlee, Galashiels, | 1 0 0 |

SECTION 27.—SHEARLING TUP.

- | | |
|---|-------|
| 1. Andrew T. Elliot, Newhall, Galashiels, | 3 0 0 |
| 2. Andrew T. Elliot, Newhall, Galashiels, | 2 0 0 |
| 3. Andrew T. Elliot, Newhall, Galashiels, | 1 0 0 |

Carry forward, £292 6 8

		Brought forward,	£192	6	8
SECTION 28.—Three EWES, above 1 Shear.					
1. R. W. Laidlay, Halls, Dunbar,	3 0 0
2. Thomas Elliot, Blackhaugh, Galashiels,	2 0 0

SECTION 29.—Three SHEARLING EWES or GIMMERS.					
1. R. W. Laidlay, Halls, Dunbar,	.	.	.	.	3 0 0
2. Thomas Elliot, Blackhaugh, Galashiels,	.	.	.	.	2 0 0
3. Mrs Crosbie, Lagganlee, Dunscore, Dumfries,	.	.	.	.	1 0 0

EXTRA SECTION.

SECTION 30.—Three BLACKFACED WETHERS, not above 4 Shear.					
1. Thomas Irving, Curriestanes, Dumfries,	.	.	.	.	4 0 0
2. Thomas Irving, Curriestanes, Dumfries,	.	.	.	.	2 0 0
C., The Earl of Stair, K.T., Castle Kennedy.					

SECTION 31.—Three CHEVIOT WETHERS, not above 3 Shear.—No Entry.

EXTRA SHEEP.

Very Highly Commended.

Sir John P. Campbell Orde of Kilmory, Bait, Lochgulfhead, St Kilda, or Old Scotch Tup, Ewe, and Lamb,					
	.	.	.	.	3 0 0
					<u>£412 6 8</u>

CLASS IV.—SWINE.

SECTION 1. BOAR, Large Breed.					
1. Philip Ascroft, Rufford, Lancashire,	.	.	.	.	£5 0 0
2. John Norman, Bridge Mill, Wigton, Cumberland,	.	.	.	.	3 0 0
3. Captain Walker Jones, Little Mollington, Chester,	.	.	.	.	1 0 0

SECTION 2. SOW, Large Breed.					
1. Captain Walker Jones, Little Mollington, Chester,	.	.	.	.	4 0 0
2. Philip Ascroft, Rufford, Lancashire,	.	.	.	.	2 0 0
3. The Earl of Haddington, Tynninghame, Prestonkirk,	.	.	.	.	1 0 0

SECTION 3. Three PIGS, Large Breed, not above 8 Months old.					
1. Captain Walker Jones, Little Mollington, Chester,	.	.	.	.	4 0 0
2. Robert Wallace, Auchinbrain, Mauchline,	.	.	.	.	2 0 0

SECTION 4. BOAR, Black or Berkshire.					
1. The Earl of Haddington, Tynninghame, Prestonkirk,	.	.	.	.	5 0 0

SECTION 5. SOW, Black or Berkshire.—No Award.

SECTION 6. Three PIGS, Black or Berkshire, not above 8 Months old.—No Entry.

SECTION 7. BOAR, Middle White Breed.					
1. Philip Ascroft, Rufford, Lancashire,	.	.	.	.	5 0 0
2. Captain Walker Jones, Little Mollington, Chester,	.	.	.	.	3 0 0

SECTION 8. SOW, Middle White Breed.					
1. Captain Walker Jones, Little Mollington, Chester,	.	.	.	.	4 0 0
2. Philip Ascroft, Rufford, Lancashire,	.	.	.	.	2 0 0
3. Philip Ascroft, Rufford, Lancashire,	.	.	.	.	1 0 0

Carry forward, £42 0 0

Brought forward, £42 0 0

SECTION 2. Three PIGS, Middle White Breed, not above 8 Months old.

- | | | | | | |
|--|---|---|---|---|-------|
| 1. Philip Ascroft, Rufford, Lancashire, | . | . | . | . | 4 0 0 |
| 2. Captain Walker Jones, Little Mollington, Chester, | . | . | . | . | 2 0 0 |

EXTRA SWINE.

- | | | |
|--|-------------------|----------------|
| The Earl of Haddington, Tynninghame, Prestonkirk, Sow, | Minor Gold Medal, | 3 6 0 |
| | | <u>£51 6 0</u> |

CLASS V.—POULTRY.

SECTION

1. DORKING, Silver Grey. Cock—

- | | | | | |
|--|---|---|---|--------|
| 1. James Cranston, Holestane, Thornhill, | . | . | . | £1 0 0 |
| 2. James Cranston, Holestane, Thornhill, | . | . | . | 0 10 0 |

2. DORKING, Silver Grey. Hen—

- | | | | | |
|--|---|---|---|--------|
| 1. James Cranston, Holestane, Thornhill, | . | . | . | 1 0 0 |
| 2. James Cranston, Holestane, Thornhill, | . | . | . | 0 10 0 |

3. DORKING, Silver Grey. Cockerel—

- | | | | | |
|--|---|---|---|-------|
| 1. James Robertson, Home Farm, Gordon Castle, Fochabers, | . | . | . | 1 0 0 |
|--|---|---|---|-------|

4. DORKING, Silver Grey. Pullet—

- | | | | | |
|--|---|---|---|--------|
| 1. Andrew Mitchell, Barcheskie, Kirkcudbright, | . | . | . | 1 0 0 |
| 2. Andrew Mitchell, Barcheskie, Kirkcudbright, | . | . | . | 0 10 0 |

5. DORKING, Coloured. Cock—

- | | | | | |
|--|---|---|---|--------|
| 1. James Cranston, Holestane, Thornhill, | . | . | . | 1 0 0 |
| 2. James Cranston, Holestane, Thornhill, | . | . | . | 0 10 0 |

6. DORKING, Coloured. Hen—

- | | | | | |
|--|---|---|---|--------|
| 1. James Cranston, Holestane, Thornhill, | . | . | . | 1 0 0 |
| 2. James Cranston, Holestane, Thornhill, | . | . | . | 0 10 0 |

7. DORKING, Coloured. Cockerel—

- | | | | | |
|--|---|---|---|--------|
| 1. James Cranston, Holestane, Thornhill, | . | . | . | 1 0 0 |
| 2. William Adam, Tynet Gate, Fochabers, | . | . | . | 0 10 0 |

8. DORKING, Coloured. Pullet—

- | | | | | |
|--|---|---|---|--------|
| 1. James Cranston, Holestane, Thornhill, | . | . | . | 1 0 0 |
| 2. William Adam, Tynet Gate, Fochabers, | . | . | . | 0 10 0 |

9. COCHIN-CHINA. Cock—

- | | | | | |
|--|---|---|---|--------|
| 1. William Good, Portland Park, Hamilton, | . | . | . | 1 0 0 |
| 2. Mrs Agnes S. Underwood, Irongray Manse, Dumfries, | . | . | . | 0 10 0 |

10. COCHIN-CHINA. Hen—

- | | | | | |
|--|---|---|---|--------|
| 1. Mrs Agnes S. Underwood, Irongray Manse, Dumfries, | . | . | . | 1 0 0 |
| 2. William Good, Portland Park, Hamilton, | . | . | . | 0 10 0 |

11. COCHIN-CHINA. Cockerel—No Entry.

12. COCHIN-CHINA. Pullet—No Entry.

13. BRAHMAPOOTRA. Cock—

- | | | | | |
|--|---|---|---|--------|
| 1. William Good, Portland Park, Hamilton, | . | . | . | 1 0 0 |
| 2. William Nicoll, 150 Scouringburn, Dundee, | . | . | . | 0 10 0 |

14. BRAHMAPOOTRA. Hen—

- | | | | | |
|--|---|---|---|--------|
| 1. William Nicoll, 150 Scouringburn, Dundee, | . | . | . | 1 0 0 |
| 2. William Good, Portland Park, Hamilton, | . | . | . | 0 10 0 |

Carry forward, £17 10 0

SECTION	Brought forward,			£17	10	0
15. BRAHMAPOOTRA. Cockerel—						
1. William Nicoll, 150 Scouringburn, Dundee,	.	.	.	1	0	0
2. Eben. Bird, Glenduckie, Newburgh, Fife,	.	.	.	0	10	0
16. BRAHMAPOOTRA. Pullet—None forward.						
17. SPANISH. Cock—						
1. James Kirkpatrick, Newington, Annan,	.	.	.	1	0	0
2. James Kirkpatrick, Newington, Annan,	.	.	.	0	10	0
18. SPANISH. Hen—						
1. William Osborne, Carruchan, Dumfries,	.	.	.	1	0	0
2. James Kirkpatrick, Newington, Annan,	.	.	.	0	10	0
19. SPANISH. Cockerel—						
2. Mrs D. Mackenzie, Post Office, Meigle,	.	.	.	0	10	0
20. SPANISH. Pullet—						
2. Mrs D. Mackenzie, Post Office, Meigle,	.	.	.	0	10	0
21. SCOTCH GREY. Cock—						
1. Matthew Smith, Townhead, Thornhill,	.	.	.	1	0	0
2. William G. M'Dougall, George Street, Stirling,	.	.	.	0	10	0
22. SCOTCH GREY. Hen—						
1. Robert Shields, Enoch Bank, Thornhill,	.	.	.	1	0	0
2. William G. M'Dougall, George Street, Stirling,	.	.	.	0	10	0
23. SCOTCH GREY. Cockerel—						
1. A. W. Henderson, Airthrey Mills, Bridge of Allan,	.	.	.	1	0	0
2. A. W. Henderson, Airthrey Mills, Bridge of Allan,	.	.	.	0	10	0
24. SCOTCH GREY. Pullet—						
1. D. M'Laren, Cornon Farm, Bridge of Allan,	.	.	.	1	0	0
2. Thomas Hamilton, Braidwood Tile Works, Carlisle,	.	.	.	0	10	0
25. HAMBURG. Cock—						
1. Walter Scott, Muiredge, Sanquhar,	.	.	.	1	0	0
2. William Agnew, Dalry, Galloway,	.	.	.	0	10	0
26. HAMBURG. Hen—						
1. Eben. Bird, Glenduckie, Newburgh, Fife,	.	.	.	1	0	0
2. Walter Scott, Muiredge, Sanquhar,	.	.	.	0	10	0
27. HAMBURG. Cockerel—No Award.						
28. HAMBURG. Pullet—						
2. Walter Scott, Muiredge,	.	.	.	0	10	0
29. Any other Pure Breed. Cock—						
1. Rev. Fitzroy Lloyd, The Priory, Pittenweem (Plymouth Rock),	.	.	.	1	0	0
2. James Stewart, Dalry, Galloway (Plymouth Rock),	.	.	.	0	10	0
30. Any other Pure Breed. Hen—						
1. Rev. Fitzroy Lloyd, The Priory, Pittenweem (Plymouth Rock),	.	.	.	1	0	0
2. George Moffat, West Cottage, Busby (Plymouth Rock),	.	.	.	0	10	0
31. Any other Pure Breed. Cockerel—						
1. Rev. Fitzroy Lloyd, The Priory, Pittenweem (Plymouth Rock),	.	.	.	1	0	0
32. Any other Pure Breed. Pullet—						
1. Rev. Fitzroy Lloyd, The Priory, Pittenweem (Plymouth Rock),	.	.	.	1	0	0
2. George Moffat, West Cottage, Busby (Plymouth Rock),	.	.	.	0	10	0
Carry forward,				£28	0	0

SECTION	Brought forward,	£38 0 0
33. GAME—Black or Brown Reds. Cock—		
1. Robert Frew, Kirkcaldy,	1 0 0	
34. GAME—Black or Brown Reds. Hen—		
1. Joseph Carruthers, Sanquhar,	1 0 0	
2. John Ellis, Mosshouses, Penicuik,	0 10 0	
35. GAME—Black or Brown Reds. Cockerel.—None forward.		
36. GAME—Black or Brown Reds. Pullet—		
2. Claude L. Ralston, Glamis House, Glamis,	0 10 0	
37. GAME—Any other Pure Breed. Cock—		
2. John Nivison, Glencorse, Parkgate, Dumfries (Indian)	0 10 0	
38. GAME—Any other Pure Breed. Hen—		
2. James Smith, Townhead Farm, Thornhill (Pile),	0 10 0	
39. GAME—Any other Pure Breed. Cockerel.—None forward.		
40. GAME—Any other Pure Breed. Pullet—		
2. Joseph Carruthers, Sanquhar,	0 10 0	
41. BANTAM—Any Pure Breed. Cock—		
1. D. McLaren, Cornton Farm, Bridge of Allan (Sebright),	1 0 0	
2. Alexander Frew, Kirkcaldy,	0 10 0	
42. BANTAM—Any Pure Breed. Hen—		
1. Miss Bessie F. Frew, Kirkcaldy,	1 0 0	
2. George K. Scobie, Dunfermline,	0 10 0	
43. BANTAM—Any Pure Breed. Cockerel—		
1. George K. Scobie, Dunfermline,	1 0 0	
2. Miss Robina Frew, Kirkcaldy,	0 10 0	
44. BANTAM—Any Pure Breed. Pullet—		
1. George K. Scobie, Dunfermline,	1 0 0	
2. R. E. Frew, Kirkcaldy,	0 10 0	
45. DUCKS—White Aylesbury. Drake.—None forward.		
46. DUCKS—White Aylesbury. Duck.—None forward.		
47. DUCKS—White Aylesbury. Drake (Young).—No Entry.		
48. DUCKS—White Aylesbury. Duckling.—No Entry.		
49. DUCKS—Rouen. Drake.—No Entry.		
50. DUCKS—Rouen. Duck.—None forward.		
51. DUCKS—Rouen. Drake (Young)—		
1. Joseph Carruthers, Bank House, Sanquhar,	1 0 0	
52. DUCKS—Rouen. Duckling.—No Award.		
53. DUCKS—Any other Pure Breed. Drake—		
1. James Stewart, Newabbey Village, Dumfries (Pekin),	1 0 0	
2. R. A. McNaught, Dalry, Galloway (Pekin),	0 10 0	
54. DUCKS—Any other Pure Breed. Duck—		
2. Sir George Leith Buchanan, Bart., Ross Priory, Alexandria, N.B. (East Indian),	0 10 0	
55. DUCKS—Any other Pure Breed. Drake (Young).—No Entry.		
	Carry forward,	£51 10 0

SECTION	Brought forward,	£51 10 0
56. DUCKS—Any other Pure Breed. Duckling.—No Entry.		
57. TURKEYS—Any Pure Breed. Cock.—None forward.		
58. TURKEYS—Any Pure Breed. Hen.—No Entry.		
59. TURKEYS—Any Pure Breed. Cock (Poult).—No Entry.		
60. TURKEYS—Any Pure Breed. Hen (Poult).—No Entry.		
61. GEESE—Any Pure Breed. Gander.—No Entry.		
62. GEESE—Any Pure Breed. Goose—		
1. Miss Bell, Drum Mains, Newabbey (Toulouse),	.	1 0 0
63. GEESE—Any Pure Breed. Gander (Young)—		
1. John M. Martin, of Auchendennan, Balloch (Toulouse),	.	1 0 0
64. GEESE—Any Pure Breed. Gosling—		
1. John M. Martin of Auchendennan, Balloch (Toulouse),	.	1 0 0
		<hr/>
		£54 10 0

CLASS VI.—DAIRY PRODUCE.

SECTION

1. CURED BUTTER, not less than 28 lbs.—		
1. Archibald Cullen, Woodend Farm, Airdrie,	.	£6 0 0
2. Henry Orr, Torrance, Bathgate,	.	4 0 0
3. Creamery Coy. (Limited), The Creamery, Dunragit, Wigtownshire,	.	2 0 0
V. H. C., Mrs Crerar, Millhill, Lockerbie. H. C., Arch. Bulloch, Milliken, Bishopbriggs. G., Mary Ann M'Kie, Barvernochan, Whauphill.	.	.
2. POWDERED BUTTER, not less than 7 lbs.—		
1. Donald M'Farlane, Balmuldy, Bishopbriggs,	.	6 0 0
2. Donald M'Laren, Middleton, Milngavie,	.	4 0 0
3. Donald M'Laren, Middleton, Milngavie,	.	2 0 0
V. H. C., Arch. Cullen, Woodend Farm, Airdrie. H. C., Miss M. J. A. Wilson, Cumstone, Lockerbie. C., Henry Orr Torrance, Bathgate.	.	.
3. FRESH BUTTER, Three 1-lb. Rolls—		
1. Donald M'Laren, Middleton, Milngavie,	.	6 0 0
2. Donald M'Laren, Middleton, Milngavie,	.	4 0 0
3. Henry Orr, Torrance, Bathgate,	.	2 0 0
V. H. C., Donald M'Farlane, Barmuldy, Bishopbriggs. H. C., Donald M'Farlane, Barmuldy, Bishopbriggs. C., John Lindsay, Dunjop, Castle-Douglas.	.	.
4. CHEDDAR CHEESE, 56 lbs. and upwards—		
1. William M'Master, Challock, Dunragit,	.	15 0 0
2. Mark J. Stewart of Southwick, M.P., Dumfries,	.	12 0 0
3. J. C. Cuninghame of Craugenda, Dunragit, Glenluce,	.	10 0 0
4. George Cowan, Mains of Park, Glenluce,	.	8 0 0
5. Alexander Todd, Mouswald Grange, Ruthwell,	.	5 0 0
6. Robert Thomson, Bogrie (Brae), Dumfries,	.	4 0 0
7. Alexander Todd, Mouswald Grange, Ruthwell,	.	3 0 0
8. William M'Master, Challock, Dunragit (Cruggleton Dairy),	.	2 0 0
5. CHEDDAR CHEESE, 14 lbs. and under—		
1. William M'Master, Challock, Dunragit,	.	5 0 0
2. James M'Master, Currochtrie, Drumore,	.	3 0 0
3. Alexander Todd, Mouswald Grange, Ruthwell,	.	2 0 0
6. DUNLOP CHEESE, 30 lbs. and under—		
1. Robert Wallace, Auchendrain, Mauchline,	.	5 0 0
2. A. Finckett, Ingleston of Borgue, Kirkcudbright,	.	3 0 0
		<hr/>
		£113 0 0

CLASS VII.—IMPLEMENTS.

R. Hornsby & Sons, Grantham, for Sheaf Binder,	.	.	.	.	£55	0	0
Walter A. Wood, London, for Sheaf Binder,	.	.	.	.	45	0	0
Ben. Reid & Co, Aberdeen, for Mannre Distributer,	.	.	.	.	15	0	0
General Briggs of Strathairly, for Turnip-Thinner,	.	.	.	.	15	0	0
Enallage Press Co., Leicester, for Enallage Stack,	.	.	.	Medium Gold Medal,	5	10	0
J. J. Armistead, Solway Fishery, for Fish Hatching Apparatus, Minor Gold Medal,	.	.	.	.	3	6	0
					£138	16	0

CLASS VIII.—BEE HUSBANDRY.

Richard M'Nally, Glenluce—Observatory Hive,	.	.	.	Silver Medal,	0	14	0
Wm. M'Nally, Glenluce—Display of Honey,	.	.	.	Silver Medal,	0	14	0
					£1	8	0

ABSTRACT OF PREMIUMS.

Cattle,	.	.	.	.	.	£371	4	0
Horses,	.	.	.	.	.	670	14	0
Sheep,	.	.	.	.	.	412	6	8
Swine,	.	.	.	.	.	51	6	0
Poultry,	.	.	.	.	.	54	10	0
Dairy Produce,	.	.	.	.	.	113	0	0
Implements,	.	.	.	.	.	138	16	0
Bee Husbandry,	.	.	.	.	.	1	8	0
					£2313	4	8	

JUDGES.

- SHORTHORN.**—L. C. Chriss, Hawkhill, Alnwick; Robert Lawson, Beaufort Farm, Beany; Henry W. B. Berwick, Ardgowan, Greenock.
- AYRESHIRE.**—John Caldwell, Bogside, Dundonald; John Holm, Jaspston, Neilston; John Torrance, Deadwaters, Lesmahagow.
- GALLOWAY.**—James Little, Sark Tower, Canonbie; Thomas Phillips, Carse, Kirkcudbright; James Cunningham, Tarbreoch, Dalbeattie.
- ABERDEEN-ANGUS.**—William Whyte, Hatton of Eassie, Meigle; James Reid, Greystone, Alford, N.B.; John Grant, Advie Mains, Advie.
- HIGHLAND.**—Robert Allan, Glenmore, Lochgilphead; John M'Gillivray, Ballachroan, Kingussie; Archibald M'Gregor, Glenlyon House, Aberfeldy.
- DRAUGHT STALLIONS AND COLTS.**—John Thompson, Baillieknowe, Kelso; Adam Gray, jun., Inglestone of Borgue, Kirkcudbright; John Sleigh, Strichen Mains, Strichen.
- DRAUGHT MARES, FILLIES, AND GELDINGS.**—William Gray, Muneraig, Kirkcudbright; Andrew Ralston, Glamis, Forfar; James F. Murdoch, Hallside, Newton, Cambuslang.
- HUNTERS, ROADSTERS, AND PONTES.**—T. H. Hutchinson, Manor House, Catterick; George Stodart, Netherton, Newton-Mearns.
- BLACKFACED.**—John Willison, Acharn, Killin; James Greenshields, West Town, Lesmahagow; Donald M'Intyre, Tigh-na-blair, Comrie.
- CHEVIOT.**—James Brydon, jun., Holm of Dalquhairn, New Galloway; David Hardie, Priestthaugh, Hawick; Alexander Denholm, Baildaws, Lamington.
- BORDER LEICESTER AND OTHER LONG-WOOLLED.**—Andrew Smith, Castle Mains, Gifford; George Torrance, Sisterpath, Duns.
- SHROPSHIRE AND OTHER SHORT-WOOLLED.**—A. E. Mansell, Broughton, Harmer Hill, Shrewsbury; Walter Elliot, Hollybush, Galashiels.
- HALF-BRED.**—Gideon Pott of Dod, Knowesouth, Jedburgh.
- SWINE.**—James Graham, Longburgh House, Burgh-by-Sands, Carlisle.
- POULTRY.**—James Dixon, North Park, Clayton Bradford.

DAIRY PRODUCE.—Alexander Osborne, 45 Candleriggs, Glasgow.

IMPLEMENTS—SHEAF BINDING REAPERS AND MANURE DISTRIBUTERS.—John Scott Dudgeon, Longnewton, St Boswells; James M'Crie, Broughton Mains, Sorbie; James Shaw, Skathmuh, Coldstream; James Little, Sark Tower, Canonbie; Andrew Lusk, Lockvale, Dumfries.

TURNIP-THINNERS.—John Kerr, Ferrygate, Drem; John Munro, St Cuthbert's, Melrose; Alexander Dudgeon, Easter Dalmeny, South Queensferry.

ATTENDING MEMBERS.

SHORTHORN.—Sir Jas. H. Gibson, Craig of Riccarton, Bart; John H. Dickson, Dabton; James Dalziel, Dalpeddar.

AYRESHIRE.—Niven Matthews, Whitehills; J. W. F. Connell of Auchencheyne; Robert Smith, Dalfribble.

GALLOWAY.—W. Macalpine Leny of Dalswinton; Andrew J. S. Johnstone of Halleaths; Thomas Smith, Ladyland.

ABERDEEN-ANGUS.—Robt. F. Dudgeon, yr. of Cargen; John Seton Wightman of Courance; David Kirkpatrick, Linns.

HIGHLAND.—Sir Robert Menzies of Menzies, Bart; M. Clark of Culmain, Crockettford; T. Maclelland, North Balfarn.

DRAUGHT STALLIONS AND ENTIRE COLTS.—James Murray, Catter House; Major-General Graham of Wyseby; Oliphant Brown, Mains of Duchrae.

DRAUGHT MARES, FILLES, AND GELDINGS.—Andrew Allan, Munnoch, Dalry; Andrew Lusk of Craighton; P. F. Connal Rowan of Melklewood.

HUNTERS, ROADSTERS, AND PONIES.—F. E. Villiers, Closeburn Hall; A. H. Johnstone-Douglas of Lockerbie; W. R. Farish, Tinwald Park.

BLACKFACED.—James Hope, East Barns; Captain Irving of Howdale, Burnfoot; Wellwood H. Maxwell of Munches.

CHEVIOT.—Charles Howatson of Glenbuck; James Campbell, Rosebank; James Brown, Hardgrave.

BORDER LEICESTER AND OTHER LONG-WOOLLED.—James Hewatson, Auchembainzie; W. D. Robinson Douglas of Orchardton; W. A. M'Tuik, Barlas, Dalry.

SHROPSHIRE AND OTHER SHORT-WOOLLED.—W. H. Lumsden of Balmedie; George Maxwell of Glenlee; W. T. Sproat, Borness.

HALF-BRED.—James T. S. Elliot, yr. of Wolflee; Mark J. Stewart of Southwick, M.P.; Patrick Stenart, Middlehill.

SWINE.—John Marr, Cairnbrogie; Captain Maxwell of Terregles; Provost Nicholson, Annan.

POULTRY.—John Ballingall, Dunbog; T. Shorridge of Beechwood Bank; Councillor Charlton, Dumfries.

DAIRY PRODUCE.—Donald Fisher, Jellyholm; Provost Lennox, Dumfries; James Drew of Craigenallie.

IV.—DISTRICT COMPETITIONS.

CATTLE

NAME OF DIST.	PREMIUM AWARDED TO	FOR	AMOUNT.
<i>Buchan</i>	G. Johnston, Mains of Birthlaw	Shorthorn Bull, Class I.†.	£1 10 0*
	James Cheves, Middleton	do. do. . . .	1 0 0*
	James Birnie, Overtown	do. do. . . .	0 10 0*
	James Fowlie, Brucehill	Aberdeen-Angus Bull, Class II.‡	3 0 0
	James Whyte, Mains of Cardno	do. do. . . .	2 0 0
	S. Davidson, Yokieahill	do. do. . . .	1 0 0
	Lt.-Col. Ferguson of Pitfour	Aberdeen-Angus Heifer . . .	3 0 0
	James Smith, Burnshangle	do. . . .	2 0 0
	Lt.-Col. Ferguson of Pitfour	do. . . .	1 0 0

Carry forward, £15 0 0

* Half Premiums awarded, the number of Lots being under five.

† Aged Bulls.

‡ Two-year old Bulls.

NAME OF DIST.	PREMIUM AWARDED TO	FOR	AMOUNT.
		Brought forward,	£15 0 0
<i>Royal Northern Society</i>	James Argo, Cairdseat	Aberdeen-Angus Bull, Class I.	3 0 0
	Miss Leith, Freefield	do. do.	2 0 0
	C. M'Connach, Cairnballoch	do. do.	1 0 0
	Lord Tweedmouth	do. Class II.	3 0 0
	James Fowle, Brucehill	do. do.	2 0 0
	George Reid of Little Clinterty	do. do.	1 0 0
	Marquis of Huntly	Aberdeen-Angus Heifer	3 0 0
	Earl of Strathmore	do.	2 0 0
	Earl of Strathmore	do.	1 0 0
<i>Strathbogie</i>	Duke of Richmond and Gordon, K.G.	Shorthorn Bull, Class I.	1 10 0*
	Trustees of late Walter Scott, Glendronach	do. do.	1 0 0*
	D. G. Bruce, Broadland	do. do.	0 10 0*
	Representatives of late James Bruce, Burnside	do. Class II.	3 0 0
	James Merson, Craigwillie	do. do.	2 0 0
	J. Leith, Glengarrack Mains	do. do.	1 0 0
	Alexander Geddes, Blairmore	Aberdeen-Angus Heifer	3 0 0
	A. F. & A. Leslie, Braco	do.	2 0 0
	William Duff, Burnend	do.	1 0 0
<i>United Banffshire</i>	Alex. Scott, Towie Barclay	Shorthorn Bull, Class I.	3 0 0
	Duke of Richmond and Gordon, K.G.	do. do.	2 0 0
	G. N. Watt, Gellyhill	do. do.	1 0 0
	Duke of Richmond and Gordon, K.G.	Aberdeen-Angus Bull, Class II.	3 0 0
	Countess Dowager of Seafield	do. do.	2 0 0
	Major Duff of Hatton	do. do.	1 0 0
	D. C. Bruce, Broadland	Shorthorn Heifer	3 0 0
	Alex. Scott, Towie Barclay	do.	2 0 0
	Representatives of A. Longmore, Rettie	do.	1 0 0

HORSES FOR AGRICULTURAL PURPOSES.

<i>Dumbartonshire</i>	{ T. N. M'Dowall, Auchtraleure	Stallion	. . . . .	15 0 0
<i>Lower Wigtownshire</i>	{ John Macdonald, Porterfield	Stallion	. . . . .	15 0 0
<i>Inverness</i>	David Riddell, Blackhall	Stallion	. . . . .	15 0 0
<i>Kinrossshire</i>	David Wilkie, Linnbank	Stallion	. . . . .	15 0 0
<i>Lower Anandale</i>	{ J. Crawford, Brydekirk Mains	Brood Mare	. . . . .	4 0 0
	{ Frank Roddick, Trailtrow	do.	. . . . .	3 0 0
<i>Kirriemuir</i>	John Soutar, Grange of Airlie	Brood Mare	. . . . .	4 0 0
	John Alexander, Ballindarg	do.	. . . . .	3 0 0
<i>Dunblane, Doune, and Callander</i>	{ Lieut.-Col. Stirling of Kippendavie	Brood Mare	. . . . .	4 0 0
	{ James Sands, Greenfoot	do.	. . . . .	3 0 0

Garry forward, £147 0 0

* Half Premiums awarded, the number of Lots being under five.

NAME OF DIST.	PREMIUM AWARDED TO	FOR	AMOUNT.
		Brought forward,	£147 0 0
<i>Esldale and Liddesdale</i>	James Little, Sark Tower	Two-year old Filly	2 0 0
	Robert Bell, Greenknow	do.	1 0 0
	David Hardie, Priestthaugh	do.	0 10 0
	David Hardie, Priestthaugh	One-year old Filly	2 0 0
	George Johnstone, Moss-side	do.	1 0 0
	James Little, Beckhall	do.	0 10 0
<i>Morayshire</i>	John Hunter, Dipple	Two-year old Colt	1 0 0*
	James Scott, St Mary's	do.	0 10 0*
	W. Robertson, Aberlour Mains	One-year old Colt	1 0 0*
	James Sutor, Collie	do.	0 10 0*
	Thos. Hay, Reeves	Two-year old Filly	2 0 0
	R. J. Mackay, Burgie Lodge	do.	1 0 0
	James Mackessack, Earnside	do.	0 10 0
	John Hunter, Dipple	One-year old Filly	2 0 0
	Wm. Morrison, Hillhead	do.	1 0 0
	W. Robertson, Aberlour Mains	do.	0 10 0
<i>Lower Ward of Renfrewshire</i>	Peter M'Anlay, Craigs	Two-year old Colt	1 0 0*
	Alexander Scott, Greenock	do.	0 10 0*
	Alexander Scott, Greenock	One-year old Colt	2 0 0
	R. S. Scott, Craigievar	do.	1 0 0
	Sir M. R. Shaw Stewart, Bart.	Two-year old Filly	2 0 0
	John Scott, Barr	do.	1 0 0
	Hugh Black, Gibblieston	do.	0 10 0
	Sir M. R. Shaw Stewart, Bart.	One-year old Filly	2 0 0
	Sir M. R. Shaw Stewart, Bart.	do.	1 0 0
	James Mathie, Cove	do.	0 10 0
<i>Vale of Alford</i>	James Strath, Greystone	Two-year old Filly	1 0 0*
	Joseph Brown, Little Endovie	do.	0 10 0*
	George Wilken, Waterside	do.	0 5 0*
	James Strath, Greystone	One-year old Filly	2 0 0
	William Anderson, Wellhouse	do.	1 0 0
	Archd. Cooper, Broomhill	do.	0 10 0
SHEEP.			
<i>County of Forfar</i>	Earl of Dalhousie	Leicester Tup	2 0 0
	John Taylor, Redcastle	do.	1 0 0
	Earl of Dalhousie	Leicester Shearling Tup	2 0 0
	John T. Shield, East Mains of Rossie	do.	1 0 0
	Earl of Dalhousie	Leicester Ewes	1 0 0*
	John T. Shield, East Mains of Rossie	do.	0 10 0*
	Earl of Dalhousie	Leicester Gimmers	1 0 0*
	George Cowe, Balhousie	do.	0 10 0*
<i>County of Caithness</i>	William Purves, Thurdistoft	Leicester Shearling Tup	2 0 0
	William Purves, Thurdistoft	do.	1 0 0
	George Brown, Walten Mains	Leicester Gimmers	1 0 0*
	James Purves, Barrogill Mains	do.	0 10 0*
<i>Arran</i>	James Allan, jun., Bainscoole	Blackfaced Tup	2 0 0
	James Allan, jun., Bainscoole	do.	1 0 0
	James Allan, jun., Bainscoole	Blackfaced Shearling Tup	2 0 0
	James Allan, jun., Bainscoole	do.	1 0 0
	James Allan, jun., Bainscoole	Blackfaced Ewes	2 0 0
	John Wallace, Kircadale	do.	1 0 0
	John Wallace, Kircadale	Blackfaced Gimmers	2 0 0
	James Allan, jun., Bainscoole	do.	1 0 0

Carry forward, £206 5 0

* Half Premiums awarded, the number of Lots being under five.

NAME OF DIST.	PREMIUM AWARDED TO	FOR	AMOUNT.
			Brought forward, £206 5 0
<i>Badenoch and Rothiemurchus</i>	C. J. B. Macpherson of Belleville	Blackfaced Tup	Minor Silver Medal
	A. D. Macrae, Ruthven	Blackfaced Shear. Tup	Minor Silver Medal
	R. MacGregor, Kincaig	Blackfaced Ewes	Minor Silver Medal
	A. D. Macrae, Ruthven	Blackfaced Gimmers	Minor Silver Medal
<i>West Teviotdale</i>	John Scott, West Deloraine	Cheviot Tup	Minor Silver Medal
	John Scott, West Deloraine	Cheviot Shearling Tup	Minor Silver Medal
	John Scott, West Deloraine	Cheviot Ewes	Minor Silver Medal
	Miss Grieve, Skelfhill	Cheviot Gimmers	Minor Silver Medal

DAIRY PRODUCE.

<i>Forth</i>	James Anderson, Mid Forth	Sweet Milk Cheese	Minor Silver Medal	
	James Struthers, Westerhouse	Cured Butter	Minor Silver Medal	
				£206 5 0
10 Minor Silver Medals				2 11 8
				<u>£208 16 8</u>

SPECIAL GRANTS.

<i>Glasgow Agricultural Society</i>	Vote in aid of Premiums	. . . . .	£50	0	0
<i>Ayrshire Agricultural Association</i>	Vote to Dairy Produce Show at Kilmarnock	. . . . .	20	0	0
<i>Joint Show at Forres</i>	Vote in aid of Premiums	. . . . .	20	0	0
<i>Orkney Agricultural Society</i>	Vote in aid of Premiums	. . . . .	3	0	0
<i>Rousay Agricultural Society</i>	Vote in aid of Premiums	. . . . .	3	0	0
			<hr/>		
			£96	0	0

MEDALS IN AID OF PREMIUMS GIVEN BY LOCAL SOCIETIES.

Minor Silver Medals were awarded to the following:—

ABERDEENSHIRE.

NAME OF DISTRICT.	MEDAL AWARDED TO	FOR
<i>Mar</i>	George Reid, Basds S. Campbell, Kinellar	Aberdeen-Angus Heifer Shorthorn Heifer
<i>Slains</i>	Jas. Cochrane, Waterside Lodge Jas. Cochrane, Waterside Lodge	Shorthorn Heifer Clydesdale Filly
<i>Strichen</i>	Alex. Urquhart, Auchtygills James Smith, Burnshangie	Shorthorn Bull Aberdeen-Angus Heifer
<i>Vale of Alford</i>	Alex. Strachan, Wester Fowls William Yool, Glenlogie	Swedish Turnips Yellow Turnips

ARGYLISHIRE.

<i>Kintyre</i>	Robt. Dickie, Killeonan William Young, Drum David M'Gibbon, Ardnacraig Malcolm M'Neill, Amod	Ayrshire Bull Ayrshire Cow Clydesdale Filly Blackfaced Tup
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AYRESHIRE.

<i>Colmonell and Ballantrae</i>	James Wilson, Macherquhat William Gilmour, Pinnore Mains John Semple, Balkiasock	Ayrshire Bull Clydesdale Mare Blackfaced Tup
<i>Coylton and Stair</i>	Peter Conner, Drumdow Miss Agnes Mair, Shalloch	Ayrshire Cow Clydesdale Mare

NAME OF DISTRICT.	MEDAL AWARDED TO	FOR
<i>AYRSHIRE—continued.</i>		
<i>Craigie</i>	William Hunter, Foulton William Hunter, Foulton James Kilpatrick, Craigie Mains	Ayrshire Bull Ayrshire Cow Clydesdale Mare
<i>Dalrymple</i>	James Blair, Holmes James Armstrong, Thornhill	Ayrshire Cow Clydesdale Filly
<i>Darvel</i>	Hugh White, Wraise Mrs Murray, Meikleglen James Bulger, Darvel	Sweet Milk Cheese Powdered Butter Collection of Roots
<i>Girvan</i>	James Wilson, Macherquhat John Chalmers, Camreggan	Ayrshire Bull Clydesdale Filly
<i>Irvine</i>	James Chalmers, Penshill Robt. Dykes, jun., Hillhouse	Ayrshire Cow Clydesdale Mare
<i>Kilmarnock</i>	Mark J. Stewart of Southwick, M.P. Mark J. Stewart of Southwick, M.P. William Montgomery, Banks Reston Mather, Provanhill	Ayrshire Bull Ayrshire Cow Clydesdale Stallion Clydesdale Mare
<i>Loudoun</i>	A. Meikle, Strath	Sweet Milk Cheese
<i>Monkton, Newton, &c.</i>	James A. Reid, Mid Sanquhar R. F. F. Campbell of Craigie, M.P.	Ayrshire Heifer Clydesdale Mare
<i>Patna</i>	W. Anderson, Barnell James Armstrong, Thornhill W. M. S. Howatson, Carskeoch	Ayrshire Heifer Clydesdale Mare Blackfaced Ewes
<i>BERWICKSHIRE.</i>		
<i>East of Berwick- shire</i>	Alex. Crosbie, Middlefield Gavin Jack, Foulden Newton George Simson, Courthill	Ayrshire Cow Clydesdale Mare Leicester Ewes
<i>DUMFRIESSHIRE.</i>		
<i>‘Umbernauld</i>	Tho. Chalmers, Airdriehead Robt. Jarvie, Whitelees James Dykes, Old Inns	Ayrshire Bull Ayrshire Cow Clydesdale Mare
<i>Kirkintilloch</i>	Robt. M’Kean, Lumloch J. & A. Douglas, Braes o’ Yetts J. & A. Douglas, Braes o’ Yetts William Stewart, Milton Mains	Ayrshire Cow Ayrshire Heifer Clydesdale Mare Clydesdale Mare
<i>FIFESHIRE.</i>		
<i>Windygates</i>	John Hill, Langside Edward Balfour, yr. of Balbirnie	Shorthorn Cow Clydesdale Filly
<i>INVERNESS-SHIRE.</i>		
<i>Inverness</i>	Duchess of Sutherland Countess Dowager of Seafield Mackintosh of Mackintosh James Mackessack, Earnside Lord Lovat	Shorthorn Bull Highland Bull Aberdeen-Angus Heifer Clydesdale Filly Blackfaced Tup
<i>Strathglass</i>	Lord Tweedmouth Lord Tweedmouth	Sandy Oats Collection of Turnips
<i>Strathpey</i>	John Grant, Advie Mains John Grant, Advie Mains William Camerom, Connakyle Alex. Fraser, Woodpark Countess Dowager of Seafield	Aberdeen-Angus Bull Aberdeen-Angus Cow Clydesdale Mare Roadster Mare Leicester Tup

NAME OF DISTRICT.	MEDAL AWARDED TO	FOR
LANARKSHIRE.		
<i>Old Monkland</i>	James M'Gillivray, North Alderston	Ayrshire Cow
NAIRNSHIRE.		
<i>Nairnshire</i>	Mrs Mackenzie, Blairmore	Brahmas
<i>Ornithological</i>	Miss R. Fraser, Brackla House	Cochins
	Mrs Gen. Baillie, Lochloy	Hamburgs
	Alex. Falconer, Ballagan	Spanish
ORENEY.		
<i>Rousay</i>	General Burroughs of Rousay, C.B.	Shorthorn Bull
	General Burroughs of Rousay, C.B.	Shorthorn Heifer
PERTHSHIRE.		
<i>Dunblane Poultry</i>	William M'Canll, Cullens	Silver Dorkings
	David Sword, Helensfield	Langshans
<i>Dunblane</i>	Lt.-Col. Stirling of Kippendavie	Clydesdale Mare
RENFREWSHIRE.		
<i>Johnstone</i>	Robert Wilson, Manswrae	Ayrshire Cow
	David Riddell, Blackhall	Clydesdale Mare
<i>Kilbarchan</i>	Caldwell Blackwood, Kibblesstone	Farm Produce
<i>Mearns</i>	John Calderwood, Bogside	Ayrshire Cow
	William Clark, Netherlee	Clydesdale Gelding
ROSS-SHIRE.		
<i>Northern Pastoral Club</i>	R. C. Munro Ferguson of Novar, M.P.	Blackfaced Tup
	Lord Lovat.	Blackfaced Shearling Tup

80 Minor Silver Medals, £20, Os. 2d.

PLOUGHING COMPETITIONS.

In 1885-86 the Society's Silver Medal was awarded at 148 Ploughing Competitions as follows:—

ABERDEENSHIRE.		
{ NAME OF SOCIETY.	PLACE OF COMPETITION.	SILVER MEDAL AWARDED TO
Aboyne.	Haugh	James Esson, Mill of Dess.
Buchan (North District).	Mains of Park.	Charles Smith, Nether Cabra.
Buchan (South District).	Monyruy.	Thos. Gall, Brae of Biffie.
Corgarff.	Easter Dunandue	John Tait, Oldgarf.
Echt, Skene, and Midmar.	Knockquharn	James Lawrie, Cornhill.
Forgue.	Conzie.	Wm. Paterson, Craigmanzy.
Leochel-Cushnie.	Manse.	John Duncan, Old Manse.
Lochside and Cromar.	Home Farm.	William Craig, Mill of Kincaigie.
Lumphanan.	Tillyching.	Farquharson Cromar, Auchinhove.
Oyne.	Old Westhall.	Robt. Nicol, Blairbowie.
Peterhead.	Cocklaw.	George Clubb, Westerton.
Strichen.	Knowhead.	And. Quirrie, Auchtygills.

NAME OF SOCIETY.	PLACE OF COMPETITION.	SILVER MEDAL AWARDED TO
ARGYLLSHIRE.		
Appin.	Kinlochlaich Mains.	John Struthers, Kinlochlaich Mains.
Coll.	Frizland.	Lachlan M'Lean, Totornald.
Gigha.	Gigha.	Angus M'Gougan, So. Drumachro.
Glenorchy.	Dalmally.	John Macphail, Brackley.
Islay, Jura, and Colonsay.	Octavulin.	Hugh Gillespie, Creggan.
Kilberry.	Home Farm.	John Bine, Drumdrishalg.
Kilfinan.	Ballimore.	Peter Whyte, Inveryna.
Kintyre.	Christlach.	Dun. M'Phee, Darlochan.
Lismore.	Balleveolan.	John Livingstone, Balura.
Lorn.	Dunach.	Alex. M'Culloch, Kilbrida.
Nether Lochaber.	Cuil.	D. Cameron, Glenshalloch.
Netherlorn.	Camuslaich.	Dun. M'Callum, Dnachy.
AYRESHIRE.		
Ayr and Alloway.	Bank.	John Robb, Corton.
Beith.	Mossneuk.	John Dickie, Beith.
Coylton.	Rathhill.	William Cowan, Barngora.
Cumnock.	Bridgend.	A. Robertson, Crosshill.
Dalry.	Burnhouses.	Robert Fulton, Cuff.
Fenwick.	Townhead.	John Brown, Beanscroft.
Galston.	Barmill.	Jas. Borland, Holehouse.
Girvan.	Brackenbrae.	Chas. Blackley, Cairnhill.
Glenmuir and Bello Waters.	Dykes.	Robert Orr, Kyle.
Kilmarnock.	South Dean.	Hugh Melkie, Lugtonridge.
Kirkmichael.	Goosehill.	William Bell, Arnsow.
Monkton.	Muirhouse.	Robt. M'Cartney, Muirhouse.
Monkwood and Mimshant.	Milton.	Jas. Hunter, Stranhead.
New Cumnock.	Lanemark.	David Paterson, Lanemark.
Sern.	Dalldilling.	Chas. Shaw, Blackdyke.
Stewarton.	Castleton.	Thos. Borland, Kilbride.
Stratton.	Bennan.	William Lennox, Bennan.
Tarbolton.	Collsfield Mains.	Hugh Fergusson, Cline.
BANFFSHIRE.		
Central Banffshire.	Netherton.	Thomas Bremner, ArdonaId.
BEEWICKSHIRE.		
Cockburnspath.	Penmanshiel.	John Finlay, Pathhead.
BUTE AND ARRAN.		
Arran.	Clachaig.	Alex. Ferguson, Blairhoidheach.
Bute (1885).	Kerrylamont.	Hugh M'Lean, Ascog.
Bute.	Melkie Kilmory.	Hugh M'Call, Bruchag.
CLACKMANNANSHIRE.		
Clackmannan Union.	Bowhouse.	Robert Inglis, Harvisston.
CROMARTYSHIRE.		
Cromarty.	Peddiston.	John Munro, Kathie.
DUMBARTONSHIRE.		
Kilmarnock and Bonhill.	Blairnile.	James Orr, Blairnile.
Kirkintilloch.	Dumbuck.	Wm. Paterson, Bedcow.

NAME OF SOCIETY.	PLACE OF COMPETITION.	SILVER MEDAL AWARDED TO
DUMFRIESSHIRE.		
Canonbie (1885).	Mouldy Hills.	Robt. Armstrong, Byreburnside.
Canonbie.	Sark Tower.	John Irving, Glencartholm.
Glencalm.	Boreland.	Jas. Little, Gordieston.
Holywood.	Birkhall.	Jas. Brownridge, Gubton.
Kirkconnel.	Rigg.	Thomas Haiber, Hall.
EDINBURGHSHIRE.		
West Calder.	West Muir.	William Stirling, Pottishaw.
ELGINSHIRE.		
Knockando and Kirdals.	Cardow.	G. Ritchie.
Morayshire.	Kinloss.	Donald Mathieson, Dipple.
Urquhart.	Corskie.	Wm. Marshall, Brandston.
Western District of Elgin.	Morrison.	Jas. Clark, Old Mills.
FIFESHIRE.		
Auchterderran.	South Dundonald.	William Mitchell, Dogton.
Crossgates.	Annfield.	Wm. Dewar, Belyeoman.
East of Fife.	East Pitkerrie.	Jas. Mentiely, Kippo.
Leslie.	Inglis.	David Steele, Nether Stenton.
FORFARSHIRE.		
Forfar and Dunnichen.	East Mains of Lour.	Wm. Shepherd, New Dike.
Kirriemuir.	Pinckerton.	Jas. Deuchar, Kintyre.
Mains and Strathmartine.	Baldovan.	Thos. Anderson, Muirloch.
Monifieth, Monikie, &c.	Ravensby Mains.	Chas. Turnbull, New Downie.
Panbride, Arbirlot, &c.	Fauldiehill.	Jas. Duncan, Scryne.
Tamnadice and Oathlaw.	Derachie.	Alex. Gair, Barnyarda.
Venney and Lunan Water.	Gilchorn.	William Mann, Pool.
HADDINGTONSHIRE.		
Salton.	Pilmore.	Jas. Scott, Samuelston Mains.
INVERNESS-SHIRE.		
Glen Urquhart.	Allanmore.	John Macdonald, Balmacaan.
Inverness.	Oldtown.	Simon Fraser, Raigmore.
Inverness Junior.	Broomton.	Chas. Cumming, Midton.
Laggan.	Gaskbeg.	Ronald Cattasach, Achmore.
Lochaber.	Moy.	Dun. Cameron, Achintee.
Stratherrick.	Gorthleck.	Alex. Fraser, Garthbey.
Strathglass.	Invercannich.	Alex. M'Lennan, Kerrow.
Strathnairn.	Leasach.	Rod. Gordon, Wester Inches.
Strathspey.	Dochlaggie.	Geo. Grant, Curr.
KINCARDINESHIRE.		
Arbuthnott, &c.	Wraes.	Alex. Stephen, Chcpelton.
Durris.	Balbridie.	Jas. Shepherd, Balrownie.
Maryculter.	Millbank.	John Henderson, Nether Muiskie.
Nigg.	Cove.	Robt. Murray, Blackhills.
Portlethen.	Eshywell.	Wm. Beattie, jun., Scatterburn.
Rickarton, Urie, &c.	Millsburn.	John Caird, jun., Newbigging.
Strachan.	Dalbreck.	Wm. Forbes, Croftfoddie.
STEWARTRY OF KIRKCUDBRIGHT.		
Kirkpatrick-Durham.	Dalbeattie.	Jas. Bell, Walton Park.
Penninghame, &c.	Barholm Mains.	Wm. Davidson, Spittal.
Troquear.	Drungans.	John Linwood, Carruchan.
LANARKSHIRE.		
Dumston Water.	Boghouse.	Wm. Blackwood, Lisclough.
New Monkland.	Rochalloch.	John Dykes, jun., Kipps.
Old Monkland.	Kirkwood.	Alex. Shanks, jun., Shawhead.

NAME OF SOCIETY.	PLACE OF COMPETITION.	SILVER MEDAL AWARDED TO
LINLITHGOWSHIRE.		
Kinneil.	Woodhead.	Robt. Mettle, Upper Kinneil.
NAIRNSHIRE.		
Ardclach.	Dunearn.	Don. Alexander, Behaurie.
ORKNEY.		
Eglishay.	South Tofts.	J. C. Mainland, Weyland.
Evie and Rendall.	Quinnamuckle.	William Wood, Midhouse.
Orkney.	Crantit.	John Selater, Weyland.
Rousay and Veira.	Helziegitha.	John Mainland, Onziebust.
Rousay and Veira.	Sockness.	Allan Gibson, Sockness.
St Andrews.	Hall of Tankerness.	P. Miller, Hall of Tankerness.
St Ola.	Work.	Wm. Shearer, Wideford Maina.
Sanday.	Sanday.	John Peace, Beadfield.
Shapansay.	Monquhanny.	Wm. Dennison, Ness.
South Ronaldshay.	Knockhall.	Geo. Norquay, Smiddybanks.
Stronsay.	Housebay.	Jas. Chalmers, Bondonaton.
West Mainland.	Howa.	John Mackay, Clestron.
PEEBLESSHIRE.		
Peebleshire (open).	Edderston.	Wm. Brown, Maffingsland.
PERTHSHIRE.		
Ardoch.	Quoiga.	John Sharp, Burnside.
Arnprior.	Archbae.	Dan. M'Donald, Goodiebank.
Blairdrummond, &c.	Easter Ross.	Robt. Fotheringham, Southfield.
Breadalbane (Western Dist.)	Finlarig.	P. Cameron, Lochearnhead.
Culross.	Balgownie.	Jas. Drysdale, Harvieston.
Dalguise.	Dalguise.	Don. M'Lauchlane, Meadows.
Drummond Castle.	Cultburn.	John Gow, Standingfauld.
Glenlyon.	Balantyre.	Don. M'Inoy, Gallin.
Foss and Strathummel.	Mains of Foss.	Peter Stewart, Over Bohespic.
Grandtully.	Lednaekes.	Jas. M'Gregor, Croftcat.
Kilmadock.	Munnleiston.	And. Cairns, Row.
Logiesalmond and Lyndoch.	South Arditlie.	Wm. Duncan, Pitcairngreen.
Mld. Dist. of Athole, &c.	Guay.	Robert Forbes, Balnacraig.
Monzievaird and Strowan.	Lochland.	Wm. M'Isaac, Curroch.
Moulin.	West Hangh.	Jas. Robertson, Balnacree.
Port of Monteith.	Port of Monteith.	Wm. Ferguson, Auchinsault.
Rannoch.	Lassintullich.	Hugh Campbell, Auchtarain.
Stormont Union.	Mains of Fordie.	John Robertson, Taymount.
Strathbraan.	Ballinloan.	John Scrimgeour, Drumour.
Thornhill.	Hillhead.	John Murdoch, Boghall.
Weem.	Castle Menzies.	John Menzies, Donmaheich.
RENFREWSHIRE.		
Cathcart, &c. (open).	Merrylee.	William Wilson, Shawmoss.
Cathcart, &c. (local).	Merrylee.	William Wilson, Shawmoss.
Erskine and Inchinnan.	Gladstone.	John Fraser, West Ferry.
Greenock, Gourock, &c.	Midtown.	John Telfer, Hole.
Kilmaccolm, &c.	Rowantreehill.	James Mathie, Cove.
Renfrewshire.	Barskiven.	Allan Steven, Clincart.
STIRLINGSHIRE.		
Bannockburn, &c.	Greekhill.	Peter Muirhead, Pirnhall.
Craigforth and Touch.	Falleninch.	John M'Gregor, Hillhead.
Eastern Stirlingshire.	Halls of Airth.	Thos. Stevenson, Muirhead.
Strathendrick.	Balfanning.	John Ross, Croy Cunningham.
SUTHERLANDSHIRE.		
Lairg.	Colobol.	George Fraser, Achadaphrie.
Rosehall.	Invernauld.	A. Ross, Auchengill.

NAME OF SOCIETY.	PLACE OF COMPETITION.	SILVER MEDAL AWARDED TO
WIGTOWNSHIRE.		
Machars.	Galloway House.	Wm. Melvin, Longhill
New Luce.	Knockiebay.	John M'Quistin, Balnall.
Old Luce.	Camrie.	David Blain, Linnings.
Stoneykirk.	West Galdenoch.	Jas. Robertson, Three Mark.
Whithorn and Glasserton.	Rispaun.	Wm. Milveen, Longhill.

148 Minor Silver Medals, £38, 4s. 8d.

V.—COTTAGES AND GARDENS.

1. BEST KEPT COTTAGES AND GARDENS.

ARGYLLSHIRE.		
<i>Coll</i>	Hector M'Fadyen	Cottage £1 0 0
	Janet M'Kinnon	do 0 10 0
	Hugh M'Fadyen	Garden 1 0 0
	James Smart	do 0 10 0
<i>Lorn</i>	Dugald Campbell	Cottage 1 0 0
	William M'Nair	do 0 10 0
	John Macdonald	Garden 1 0 0
	William M'Nair	do 0 10 0
FIFESHIRE.		
<i>Kingskettle</i>	James Forrester	Garden 1 0 0
	John Balfour	do 0 10 0
<i>Newburgh</i>	John Young	Cottage 0 10 0*
	George Bett	Garden 1 0 0
	John Young	do 0 10 0
STEWART OF KIRKCUDBRIGHT.		
<i>Corsock</i>	Mrs Geiston	Garden 1 0 0
	John Johnston	do 0 10 0
<i>Crossmichael</i>	James M'Knight	Garden 1 0 0
	James Murdoch	do 0 10 0
LANARKSHIRE.		
<i>Hamilton</i>	John Bonomy	Cottage 0 10 0*
	John Meikle	do 0 5 0*
	Alexander Lewis	Garden 1 0 0
	John Bonomy	do 0 10 0
PERTHSHIRE.		
<i>Dunbarney</i>	James Young	Cottage 1 0 0
	John Bruce	do 0 10 0
	John Bruce	Garden 1 0 0
	James Young	do 0 10 0
ROSS-SHIRE.		
<i>Novar</i>	James Crombie	Cottage 1 0 0
	John Fraser	do 0 10 0
	James Munro	Garden 1 0 0
	Donald Mackenzie	do 0 10 0
		£20 15 0

* Half Premiums awarded, the number of Competitors being under three.

2. MEDALS FOR COTTAGES AND GARDENS AND GARDEN PRODUCE.

Minor Silver Medals were awarded to the following:—

AYRSHIRE.		
<i>Carrick</i>	T. Shields	Garden
	J. Kirkland	Cut Flowers
<i>Dailly</i>	Thomas Smith	Garden
	Thomas Shiels	Garden Produce
<i>Darvel</i>	James Currie	Flowers
<i>Loudoun</i>	M. Brown	Vegetables
DUMFRIESSHIRE.		
<i>Kirkpatrick-Fleming</i>	Adam Currie	Garden
EDINBURGSHIRE.		
<i>Liberton and Newton</i>	Thomas Rooney	Flower Plot
	John Hunter	Garden
<i>Ratho</i>	James Paterson	Cottage.
	C. Sneddon	Garden
ELGINSHIRE.		
<i>Dyke</i>	Roderick M'Kenzie	Garden
FIFESHIRE.		
<i>Strathmiglo</i>	James Herd	Vegetables
	Alexander Petrie	Garden
HADDINGTONSHIRE.		
<i>Pencailand</i>	James Scott	Garden
INVERNESS AND NAIEN SHIRES.		
<i>Croy and Petty</i>	Mrs M'Gregor	Cottage
	James D. M'Gregor	Garden
STEWARTRY OF KIRKCUDBRIGHT.		
<i>Kirkpatrick-Durham</i>	William Riddick	Flower Plot
	Alexander Roxburgh	Garden
LANKESHIRE.		
<i>Biggar</i>	James Clarkson	Vegetables
	Lawrence Fillans	Vegetables
<i>Carmeth</i>	John Clark	Fruit
	Alexander Bryce	Vegetables
<i>East Kilbride</i>	C. Robertson	Flower Garden
	C. Robertson	Vegetable Garden
<i>Law</i>	Dr Patterson	Flower Plot
	John Weir	Garden
<i>Mauldshe and Rosebank</i>	Alexander Baillie	Garden
	James Clelland	Flower Plot
<i>Rutherglen Victoria Gardens</i>	Henry Paterson	Garden
	John Simpson	Garden
<i>Rutherglen Horticultural and Apiarian</i>	William M'Gregor	Vegetables
	Ebenezer M'Nally	Honey
<i>Stonehouse</i>	John Borland	Cottage
	W. Whitelaw	Garden
LINLITHGOWSHIRE.		
<i>Abercorn</i>	William Wilson	Garden

NAIRNSHIRE.

<i>Caudor</i>	. . . . .	Mrs William M'Intosh	Cottage
		William M'Intosh	Garden

PERTSHIRE.

<i>Almond Valley</i>	. . . . .	James Young	Cottage
		Thomas Duff	Garden
<i>Cherrybank</i>	. . . . .	John Henderson	Cottage
		James M'Gregor	Garden
<i>Coupar-Angus</i>	. . . . .	Charles Cramond	Cottage
		David Whyte	Garden

RENFREWSHIRE.

<i>Kilbarchan</i>	. . . . .	William Mason	Vegetables
<i>Renfrew</i>	Robert Weir	Garden
		Lewis M'Ewan	Cut Flowers

STIRLINGSHIRE.

<i>Camelon</i>	J. Ritchie	Garden
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SUTHERLANDSHIRE.

<i>Golspie</i>	John W. Cameron	Garden
		John F. Gunn	Garden

50 Minor Silver Medals, £12, 18s. 4d.

VI.—VETERINARY DEPARTMENT.

CLASS EXAMINATIONS—APRIL 1886.

Silver Medals were awarded to the following:—

DICK'S VETERINARY COLLEGE.

George Howie,	Chemistry.	George Howie,	Physiology.
W. L. Weighill,	Materia Medica.	George Howie,	Morbid Anatomy.
W. L. Weighill,	Botany.	W. L. Weighill,	Cattle Pathology.
Charles M'Gregor	Anatomy.	George Howie,	Vet. Med. & Surgery.

NEW VETERINARY COLLEGE, EDINBURGH.

T. Bowhill,	Horse Pathology.	Joe Clarkson.	Physiology.
J. Buxton,	Cattle Pathology.	M. J. Cleary.	Botany.
Joe Clarkson,	Anatomy.	A. Duvall.	Chemistry.

GLASGOW VETERINARY COLLEGE.

Richard Marsh,	Horse Pathology.	John Forbes,	Botany.
Jas. Dawson,	Cattle Pathology.	John L. Orr,	Chemistry.
Jas. M'Nairn,	Anatomy.	Jas. M. Stewart,	Materia Medica.
And. S. Macqueen,	Histology & Physiology.		

21 Large Silver Medals, £14, 14s.

VII.—AGRICULTURAL CLASS, EDINBURGH UNIVERSITY.

1. James T. Cameron, Tallisker, Skye,	£4 0 0
2. H. Maitland, Alton of Coynach, Mintlaw, } equal, {	3 0 0
3. J. K. Ledingham, Slap, Turriff, }	3 0 0
	<hr/>
	£10 0 0

ABSTRACT OF PREMIUMS.

1. ESSAYS AND REPORTS,	£40 0 0
2. ABERDEEN SHOW, 1885,	60 0 0
3. DUMFRIES SHOW, 1886,	2313 4 8
4. DISTRICT SHOWS:—	
Stock and Dairy Produce,	£208 16 10
Special Grants,	96 0 0
Local Societies—80 Medals,	20 0 2
Ploughing Associations—148 Medals,	38 4 8
	<hr/>
	363 1 8
5. COTTAGES AND GARDENS—Money Premiums, £20, 15s.; 50 Minor Silver Medals, £12, 18s. 4d.,	33 13 4
6. VETERINARY DEPARTMENT—Medals to Students,	14 14 0
7. AGRICULTURAL CHAIR, EDINBURGH UNIVERSITY,	10 0 0
	<hr/>
	£2334 13 8

STATE OF THE FUNDS

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY

OF SCOTLAND

As at 30th NOVEMBER 1886.

I. BONDS—

Heritable, £3,300 at 4 per cent., £2,000 at 3½ per cent., and	
£11,479, 16s., at 3½ per cent.,	£16,779 16 0
Debenture Bonds by Clyde Navigation Trustees at 4 per cent.,	2,450 0 0
Railway Debenture Bonds at 4 per cent.,	2,000 0 0
	<hr/> £21,229 16 0

II. DEBENTURE STOCK—

£3,000 North British Railway Company, 4½ per cent., at £118, 15s.	£3,562 10 0
£2,727 Caledonian Railway Company, 4 per cent., at £115, 10s.	3,149 13 8
£1,000 London and North-Western Railway Company, 4 per cent., at £123,	1,230 0 0
	<hr/> 7,942 3 8

III. BANK STOCKS—

£6,407, 7s. 8d. Royal Bank of Scotland, at £219,	£14,032 3 0
2,218, 6s. 5d. Bank of England, at £294,	6,521 2 0
2,000, 0s. 0d. British Linen Company Bank, at £322,	6,440 0 0
1,250, 0s. 0d. National Bank of Scotland, at £311,	3,887 10 0
1,080, 0s. 0d. Commercial Bank of Scotland, at £56, 10s. per share of £20,	3,051 0 0
1,091, 13s. 4d. Bank of Scotland, at £315,	3,438 15 0
	<hr/> 87,370 10 0
<u>£14,047, 7s. 5d.</u>	

Note.—The original cost of these Bank Stocks was £22,360, 19s. 6d., showing a profit, at present prices, of £15,009, 10s. 6d.

IV. TEN SHARES (£500) OF THE BRITISH FISHERY SOCIETY, valued at	200 0 0
V. ARREARS OF MEMBERS' SUBSCRIPTIONS, considered recoverable, .	36 14 6

	£66,779 4 2
<i>Deduct</i> —BALANCE DUE TO ROYAL BANK ON ACCOUNT CURRENT,	444 0 7

AMOUNT OF FUNDS, . . . £66,335 3 7

VI. BUILDING FUND—

1. Estimated value of Building, No. 3 George IV. Bridge,	£3,100 0 0
2. Sum lent on Heritable Bond,	350 0 0
3. Deposit with Royal Bank,	49 6 11

AMOUNT OF BUILDING FUND, . . . £3,499 6 11

VII. TWEEDDALE MEDAL FUND—

Debenture Bond with Caledonian Railway Company, .	£500 0 0
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VIII. FURNITURE—

Estimated Value of Furniture, Paintings, Books, &c., .	£1,000 0 0
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W. S. WALKER, *Treasurer.*

JAS. AULDJO JAMIESON, *Chairman of Finance Committee.*

WM. HOME COOK, C.A., *Auditor.*

EDINBURGH, 5th January 1887.

VIEW OF THE INCOME AND EXPENDITURE

For the Year 1885-86.

INCOME.

1. ANNUAL SUBSCRIPTIONS AND ARREARS received,	£798 16 0
2. LIFE SUBSCRIPTIONS received,	602 3 0
	£1,400 19 0
3. INTERESTS AND DIVIDENDS received—	
Interests,	£1,082 16 4
Dividends,	1,568 19 6
	2,601 15 10
4. INCOME FROM BUILDING FUND,	12 11 1
5. CHEMICAL DEPARTMENT—Proceeds of Sale of Beans,	68 5 0
6. RECEIPTS in connection with former Shows,	17 5 0
7. BALANCE OF RECEIPTS from Dumfries Show,	1,479 9 3
8. MISCELLANEOUS,	2 5 5
SUM OF INCOME,	£5,582 10

EXPENDITURE.

1. ESTABLISHMENT—	
Salaries and Wages,	£1,384 0 0
Fen-Duties, Taxes, Coals, Gas, Insurance,	246 4 5
Repairs and Furnishings,	
	£1,630 4 5
2. FEE TO AUDITOR for 1884-85,	50 0 0
3. FEE TO PRACTICAL ENGINEER,	20 0 0
4. AGRICULTURAL EDUCATION (including Bursaries and Fees to Examiners),	285 3 0
5. CHEMICAL DEPARTMENT,	886 19 7
6. VETERINARY DEPARTMENT,	40 19 0
7. BOTANICAL DEPARTMENT,	25 0 0
8. SPECIAL GRANTS,	150 0 0
9. TRANSACTIONS,	640 18 6
10. ORDINARY Printing, Advertising, Stationery, Post-ages, and Bank Charges,	257 3 2
11. SUBSCRIPTIONS to Public Societies,	25 0 0
12. MISCELLANEOUS PAYMENTS,	49 14 0
13. PREMIUMS—	
Edinburgh Show, 1884,	£8 0 0
Aberdeen Show, 1885,	212 0 0
Dumfries Show, 1886,	1,998 14 8
District Competitions,	272 19 10
Cottages and Gardens,	40 2 6
Ploughing Competitions,	38 4 8
	2,570 1
14. PAYMENTS in connection with former Shows,	27 9 7
SUM OF EXPENDITURE,	6,658 12 11
BALANCE OF EXPENDITURE,	£1,076 2 4

W. S. WALKER, *Treasurer.*JAS. AULDJO JAMIESON, *Chairman of Finance Committee.*WM. HOME COOK, C.A., *Auditor.*

EDINBURGH, 5th January 1887.

ABSTRACT of the ACCOUNTS of the HIGHLAND and CHARGE

1. DEPOSIT with Royal Bank in name of Building Fund, . . .	£36 15 10
2. BALANCE due by Royal Bank in account current at 30th Nov. 1885, . . .	644 12 10
3. ARREARS of Annual Subscriptions at 30th Nov. 1885, £64 3 0	
Whereof due by Members who have now compounded for life, and thereby extinguished, . . . £3 0 0	
Sum ordered to be struck off as irrecoverable, . . . 39 15 6	
	<u>42 15 6</u>
	21 7 6
4. INTEREST AND DIVIDENDS—	
(1) Interest on Heritable Bonds, less Income-Tax, £511 3 4	
(2) Interest on Debenture Bonds—	
On £6,450 at 4 per cent., less tax, . . . 249 8 0	
(3) Interest on Debenture Stock—	
On £3,000 at 4½ per cent., less tax, £123 5 0	
On £3,727 at 4 per cent., less tax, 144 2 2	
	<u>267 7 2</u>
(4) Interest on Account current with Royal Bank of Scotland, for year to 30th Nov. 1886, . . . 4 17 10	
	<u>£1,032 16 4</u>
(5) Dividends on Bank Stocks—	
£6,407, 7s. 8d. Royal Bank of Scotland, £576 13 2	
2,218, 6s. 5d. Bank of England, 210 15 8	
2,000, 0s. 0d. British Linen Co. Bank, . . . 230 0 0	
1,250, 0s. 0d. National Bank of Scotland, . . . 187 10 0	
1,080, 0s. 0d. Commercial Bank of Scotland, . . . 151 4 0	
1,091, 13s. 4d. Bank of Scotland, 162 16 8	
<u>£14,047, 7s. 5d.</u>	<u>1,558 19 6</u>
(6) Dividend on 10 Shares British Fishery Society, . . . 10 0 0	
	<u>2,601 15 10</u>
5. INCOME from Building Fund—	
Interest on Heritable Bond for £350, less tax, . . . £11 16 10	
Interest on Deposits with Royal Bank, . . . 0 14 3	
	<u>2 11 1</u>
6. SUBSCRIPTIONS—	
Annual Subscription, £371 9 6	
Life Subscriptions, 602 3 0	
	<u>1,473 12 6</u>
7. CHEMICAL DEPARTMENT—	
Proceeds of Sale of Beans, Crop 1884, Pumpherston Station, . . . 68 5 0	
<i>Note</i> —The Subscriptions formerly given have now been withdrawn.	
8. RECEIPTS in connection with former Shows, 17 5 0	
9. MISCELLANEOUS RECEIPTS, 2 5 5	
10. BALANCE of Receipts from Dumfries Show, 1,479 9 3	
11. BALANCE due to Royal Bank on Account Current as at 30th November 1886, 444 0 7	
	<u><u>£6,802 0 10</u></u>
SUM OF CHARGE,	

EDINBURGH, 5th January 1887.

AGRICULTURAL SOCIETY of SCOTLAND for the YEAR 1885-86.

DISCHARGE.

1. ESTABLISHMENT EXPENSES—		
Salary to Secretary,	£850	0 0
Salary to Clerk, £300; Second Clerk, £150; Extra Clerk, £12,	462	0 0
Wages to Messenger,	72	0 0
Fuel-Duty, £28; Water Duty, £2, 3s. 4d.; Taxes, £34, 5s. 8d.,	64	9 0
Coals, £12, 3s.; Gas, £6, 6s. 1d.; Insurance, £8, 14s. 8d.,	27	3 9
Repairs and Furnishings—Alterations on Board Room, £139, 5s., Ordinary, £15, 6s. 8d.,	154	11 8
	£1,630	4 5
2. FEE to Auditor of Accounts for year 1884-85,	50	0 0
3. FEE to Practical Engineer,	20	0 0
4. AGRICULTURAL EDUCATION—		
Grant to Professor of Agriculture, £150; Prizes, £10; Bursaries, £80; Fees to Examiners and Expenses, £45, 3s.,	235	3 0
5. CHEMICAL DEPARTMENT—		
Salary and allowance to Chemist,	£600	0 0
Experimental Stations—		
Harelaw—Rent, £30; Taxes, £1, 9s. 6d.; Superintendent's Allowance, £15, 15s.; Working Expenses, £34, 9s. 9d.,	£81	14 3
Pumphreston—Rent, £13; Superin- tendent's Allowance, £15, 15s.; Labour Account, £59, 15s. 4d.,	88	10 4
Wilkie & Paul, for Tin Boxes for Samples	4	10 0
	174	14 7
Grants to Analytical Associations,	112	5 0
	886	19 7
6. VETERINARY DEPARTMENT—Fee to Professor Williams, £26, 5s.;		
Medals to Students, £14, 14s.,	40	19 0
7. BOTANICAL DEPARTMENT—Fee to Botanist for year,	25	0 0
8. SPECIAL GRANTS—Grant towards West Coast Fisheries Investiga- tion, £50; Vote to Dairy Department, £100,	150	0 0
9. SOCIETY'S TRANSACTIONS—Printing, £362; Binding and Postages, £165, 2s. 6d.; Delivering, £1, 1s.; Comparing Proof Sheets, £7, 15s.; Essays and Reports, £105,	640	18 6
10. ORDINARY Printing and Lithographing, £114; Advertising, £37, 4s.;		
Stationery, Books, &c., £34, 4s. 8d.; Postages, £62; Bank Charges, Telegrams, &c., £9, 14s. 6d.,	257	3 2
11. SUBSCRIPTIONS to Public Societies—Scottish Meteorological Society, £20; Society for Prevention of Cruelty to Animals, £5.,	25	0 0
12. MISCELLANEOUS PAYMENTS—Repairing Portable Crane, £5; Repair- ing and Storing Turnstiles, £5, 12s.; Luncheon to Directors, £6, 2s. 6d.; Reporting General Meeting, £1, 11s. 6d.; Handsels, £1, 10s.; Expenses of two Directors going to Dundee to examine Sites for Show, £3, 8s. 6d.; Secretary's travelling, &c., expenses attending Nomination of Directors, £22, 9s.; Translating Letters, £1, 3s.; Extra Messenger, £1; Sundries, £1, 17s. 6d.,	49	14 0
13. PREMIUMS—		
Edinburgh Show, 1884,	£8	0 0
Aberdeen Show, 1885,	212	0 0
Dumfries Show, 1886,	1,998	14 8
	£2,218	14 8
District Competitions,	£272	19 10
Ootages and Gardens,	40	2 6
Ploughing Competitions,	38	4 8
	351	7 0
	2,570	1 8
14. PAYMENTS in connection with former Shows,	27	9 7
15. ARREARS of Subscriptions struck off as irrecoverable,	57	6 6
16. ARREARS considered recoverable,	36	14 6
17. DEPOSIT with Royal Bank, of date 11th Nov. 1886, in name of Building Fund,	49	6 11

SUM OF DISCHARGE, . £6,802 0 10

W. S. WALKER, *Treasurer.*

JAS. AULDJO JAMIESON, *Chairman of Finance Committee.*

WM. HOME COOK, *Auditor.*

ABSTRACT of ACCOUNTS of the DUMFRIES SHOW, 1886.

CHARGE.

1. LOCAL SUBSCRIPTIONS—

Voluntary Assessment on Proprietors—

Dumfriesshire,	£1000 0 0
Stewartry of Kirkcudbright,	400 0 0
Wigtownshire not yet received,	0 0 0
	<hr/>
	£1400 0 0
Town of Dumfries,	50 0 0
	<hr/>
	£1450 0 0

AMOUNT COLLECTED DURING SHOW—

Drawn at Gates,	£1,967 17 6
Drawn at Grand Stand,	90 9 7
Season Tickets sold,	10 0 0
Catalogues and Awards sold,	179 16 2
Working Dairy—Admission, £20, 12s. 6s.;	
Sales, £43, 13s.,	64 5 6
Drawn at Lavatory,	1 16 4
	<hr/>
	2,314 5 1
3. RENT OF STALLS,	1,487 0 0
4. RENT OF REFRESHMENT BOOTHS,	175 0 0
5. INTEREST FROM TWEEDDALE MEDAL FUND,	19 6 8
6. INTEREST FROM ROYAL BANK,	6 2 6

	£5,451 14 3
Balance of Payments,	519 5 5
	<hr/>
	£5,970 19 8
<i>Note.</i> —To the above Balance of	£519 5 5
There must be added the Premiums undrawn at 30th November 1886, amounting to	308 10 0
Together,	£827 15 5
Less amount of Subscription to be received from Wig- townshire, estimated at	150 0 0
	<hr/>
MAKING THE PROBABLE LOSS,	£677 15 5

ABSTRACT of ACCOUNTS of the DUMFRIES SHOW, 1886.

DISCHARGE.

1. SHOWYARD EXPENDITURE—			
Fitting up Showyard,	.	.	£2,075 0 0
Rent of Field,	.	.	100 0 0
Clerk of Works,	.	.	17 17 6
Iron Hurdles for Sheep Pens,	.	.	26 0 0
Laying and Lifting Water Pipes,	.	.	15 10 0
Divisions for Poultry Pens,	.	.	7 5 0
Carriage of Turnstiles and Cartages,	.	.	14 5 0
Miscellaneous,	.	.	12 19 6
			<hr/>
			£2,268 17 0
2. FORAGE AND BEDDING FOR STOCK,	.	.	264 17 8
3. POLICE,	.	.	75 13 3
4. TRAVELLING EXPENSES of Judges, Stewards, &c.,	.	.	128 5 6
5. ALLOWANCE to Judges in lieu of Hotel Accommodation,	.	.	148 0 0
6. HOTEL and other Bills for Directors, and Luncheon for Judges and attending Members, &c.,	.	.	254 19 10
7. BANQUET,	.	.	29 0 6
8. MUSIC,	.	.	54 6 6
9. PRINTING Catalogues and Awards, and Lithographing,	.	.	220 18 0
10. ADVERTISING and Bill-Posting,	.	.	46 12 0
11. LOCAL SECRETARY,	.	.	20 0 0
12. VETERINARY INSPECTION,	.	.	12 0 0
13. IMPLEMENT DEPARTMENT—			
Practical Engineer's Fee and Travelling Expenses,	£66	17 6	
Damage to Crop—Trial of Sheaf-Binding Reapers,	29	0 0	
Travelling Expenses of Judges,	12	13 4	
Hotel Bills for Judges,	27	13 7	
Manures—Trial of Manure Distributors,	12	6 6	
Measuring Lots—Trial of Sheaf-Binding Reapers,	1	1 6	
			<hr/>
			149 17 5
14. WORKING DAIRY—			
Milk and Cream,	.	£32 17 6	
Strawberries,	.	29 8 0	
Engine, Shafting, and Engineers,	.	21 6 0	
Hire of Utensils,	.	9 15 8	
Cheesemakers—Three at £5, 5s. each,	.	15 15 0	
Attendants,	.	25 13 0	
Miscellaneous,	.	5 9 10	
			<hr/>
			140 5 0
15. CLERKS, Assistants, and Attendants at Turnstiles, Gates, &c.,	.	.	119 4 11
16. POSTAGES,	.	.	37 13 0
17. MISCELLANEOUS Outlays,	.	.	1 14 5
			<hr/>
AMOUNT OF GENERAL EXPENSES,	.	.	£3,972 5 0
18. PREMIUMS drawn at 30th November 1886,	.	.	1,998 14 8
			<hr/>
			<u>£5,970 19 8</u>

W. S. WALKER, *Treasurer.*JAS. AULDJO JAMIESON, *Chairman of Finance Committee.*WM. HOME COOK, C.A., *Auditor.*

EDINBURGH, 5th January 1887.

ABSTRACT of the ACCOUNTS of the ARGYLL NAVAL FUND for 1885-86.

CHARGE.

1. FUNDS as at 30th November 1885—		
Debenture Stock of the North British Railway Company,	£1,200	0 0
Funded Debt of the Clyde Navigation Trustees, £3000, purchased at	2,970	0 0
Stock of the Royal Bank of Scotland, £305, purchased at	671	0 0
Loan on Heritable Security at 4 per cent.	1,200	0 0
	<u>£6,041</u>	<u>0 0</u>
BALANCE in Bank at 30th November 1885,	254	18 8
2. INCOME received—	£6,295	18 8
On £1200 North British Railway Company Debenture		
Stock at 4½ per cent., £51, less tax £1, 14s.,	£49	6 0
On £3000 Funded Debt Clyde Navigation Trustees		
at 4 per cent., £120, less tax £4,	116	0 0
On £305 Royal Bank Stock,	27	9 0
On £1,200 lent on Heritable Security, at 4 per cent.,		
£48, less tax £1, 12s.,	46	8 0
	<u>£239</u>	<u>8 0</u>
On Bank Account,	0	19 2
		<u>240 2 2</u>
SUM OF CHARGE,	£6,536	0 10

DISCHARGE.

1. ALLOWANCES to the five following Recipients—		
E. W. E. Wemyss, seventh year,	£40	0 0
Lewis Wentworth Chetwynd, seventh year,	40	0 0
G. W. P. Hope, fourth year,	40	0 0
Arch. Peers MacEwen, third year,	40	0 0
Edward A. Baird, second year,	40	0 0
	<u>£200</u>	<u>0 0</u>
2. FUNDS as at 30th November 1886—		
Debenture Stock of the North British Railway		
Company,	£1,200	0 0
Funded Debt of the Clyde Navigation Trustees,		
£3000, purchased at	2,970	0 0
Stock of the Royal Bank of Scotland, £305, pur-		
chased at	671	0 0
Loan on Heritable Security, at 4 per cent.,	1,200	0 0
	<u>£6,041</u>	<u>0 0</u>
Balance in Bank at 30th November 1886—		
On Deposit Receipt,	£50	0 0
„ Current Account,	245	0 10
	<u>295</u>	<u>0 10</u>
		<u>6,336 0 10</u>
SUM OF DISCHARGE,	£6,536	0 10

W. S. WALKER, *Treasurer.*
JAS. AULDJO JAMIESON, *Chairman of Finance Committee.*
WM. HOME COOK, C.A., *Auditor.*

EDINBURGH, 5th January 1887.

APPENDIX (B).

PREMIUMS

OFFERED BY

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND IN 1887.

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GENERAL NOTICE.

THE HIGHLAND SOCIETY was instituted in the year 1784, and incorporated by Royal Charter in 1787. Its operation was at first limited to matters connected with the improvement of the Highlands of Scotland; but the supervision of certain departments, proper to that part of the country, having been subsequently committed to special Boards of Management, several of the earlier objects contemplated by the Society were abandoned, while the progress of agriculture led to the adoption of others of a more general character. The exertions of the Society were thus early extended to the whole of Scotland, and have, for the greater part of a century, been directed to the promotion of the science and practice of agriculture in all its branches.

In accordance with this more enlarged sphere of action, the original title of the Society was altered, under a Royal Charter, in 1834, to THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

The leading purposes of the Institution are set forth in the following pages, where it will be found that Premiums are offered for Reports on almost every subject connected with the cultivation of the soil; the rearing and feeding of stock; the management of the dairy; the improvement of agricultural machinery and implements; the growth of timber; the extension of cottage accommodation; the application of chemical science; and the dissemination of veterinary information.

Among the more important measures which have been effected by the Society are—

1. Agricultural Meetings and General Shows of Stock, Implements, &c., held in the principal towns of Scotland, at which exhibitors from all parts of the United Kingdom are allowed to compete.
2. A system of District Shows instituted for the purpose of improving the breeds of Stock most suitable for different parts of the country, and of aiding and directing the efforts of Local Agricultural Associations.
3. The encouragement of Agricultural Education, under powers conferred by a supplementary Royal Charter, granted in 1856, and authorising "THE COUNCIL of the HIGHLAND AND AGRICULTURAL SOCIETY ON EDUCATION" to grant Diplomas to Students of Agriculture; and by the establishment of Bursaries.
4. The establishment of Agricultural Stations for the purpose of promoting the application of science to agriculture, and the appointment of a chemist to superintend all experiments conducted at these Stations, and prepare a Report of the same to be published in the *Transactions*. Also to subsidise, under certain conditions, Local Analytical Associations.
5. The advancement of the Veterinary Art, by conferring Certificates on Students who have passed through a prescribed curriculum, and who are found, by public examination, qualified to practise. Now terminated in accordance with arrangements with the Royal College of Veterinary Surgeons.
6. The establishment of a Botanical Department.
7. The establishment of a Dairy Department.
8. The appointment of a Board of Examiners, and the granting of First and Second Class Certificates in Forestry.
9. The annual publication of the *Transactions*, which comprehend the Prize-Reports, and reports of experiments, also an abstract of the business at Board and General Meetings, and other communications.
10. The management of a fund left by John, 5th Duke of Argyll (the original President of the Society) to assist young natives of the Highlands who enter Her Majesty's Navy.

CONSTITUTION AND MANAGEMENT.

The general business of THE HIGHLAND AND AGRICULTURAL SOCIETY is conducted under the sanction and control of a Royal Charter, which authorises the enactment of Bye-Laws. Business connected with Agricultural Education is conducted under the authority of a supplementary Royal Charter, also authorising the enactment of Bye-Laws.

The Office-Bearers consist of a President, Four Vice-Presidents, Thirty-two Ordinary and Twenty Extraordinary Directors, a Treasurer, an Honorary and an Acting Secretary, an Auditor, and other Officers.

The Directors meet on the first Wednesday of each month from November to June; seven being a quorum. The proceedings of the Directors are reported to General Meetings of the Society, held in January and in June or July.

With reference to motions at General Meetings, Bye-Law No. 10 provides—“That at General Meetings of the Society no motion or proposal (except of mere form or courtesy) shall be submitted or entertained for immediate decision unless notice thereof has been given a week previously to the Board of Directors, without prejudice, however, to the competency of making such motion or proposal to the effect of its being remitted to the Directors for consideration, and thereafter being disposed of at a future General Meeting.”

The Council on Education, under the Supplementary Charter, consists of Sixteen Members—Nine nominated by the Charter, and Seven elected by the Society. The Board of Examiners consists of Ten Members.

Candidates for admission to the Society must be proposed by a Member, and are elected at the half-yearly General Meetings in January and June or July, but it is not necessary that the proposer should attend the meeting. The ordinary subscription is £1, 3s. 6d. annually, which may be redeemed by one payment, varying, according to the number of previous annual payments, from £7, 1s. to £12, 12s. Proprietors farming the whole of their own lands, whose rental on the Valuation Roll does not exceed £500 per annum, and all Tenant-Farmers, Secretaries or Treasurers of Local Agricultural Associations, Factors resident on Estates, Land Stewards, Foresters, Agricultural Implement Makers, and Veterinary Surgeons, none of them being also owners of land to an extent exceeding £500 per annum, are admitted on a subscription of 10s. annually, which may be redeemed by one payment, varying, according to the number of previous annual payments, from £3 to £5, 5s. Subscriptions payable on election, and afterwards annually in January. According to the Charter, a Member who homologates his election by paying his first subscription cannot retire until he has paid in annual subscriptions, or otherwise, an amount equivalent to a life composition. Members having candidates to propose are requested to state whether the candidate should be on the £1, 3s. 6d. or 10s. list.

Members of the Society receive the *Transactions* free on application to the Secretary, and are entitled to apply for District Premiums—to report Ploughing Matches for the Medal—to free admission to the Showyard, and to exhibit Stock at reduced rates. Firms are not admitted as Members, but if one partner of a firm becomes a Member, the firm is allowed to exhibit at Members' rates.

Orders, payable at the Royal Bank of Scotland, Edinburgh, are issued by the Directors, in name of the persons in whose favour Premiums have been awarded.

All communications must be addressed to “FLETCHER NORTON MENZIES, Esq., Secretary of the Highland and Agricultural Society of Scotland, No. 3 George IV. Bridge, Edinburgh.”

ESTABLISHMENT FOR 1887.

President.

HIS GRACE THE DUKE OF ATHOLE, K.T., Blair Castle, Blair-Athole.

Vice-Presidents.

THE EARL OF ELGIN AND KINCARDINE, Broomhall, Dunfermline.
Viscount STORMONT, Scone Palace, Perth.
Rev. JOHN GILLESPIE, Mouswald Manse, Ruthwell, R.S.O.
Colonel GILLON of Wallhouse, Bathgate.

Ordinary Directors.

JAMES T. S. ELLIOT, yr. of Wolfelee, Hawick.
JOHN MARR, Cairnbrogie, Old Meldrum.
NIVEN MATTHEWS, Newton-Stewart.
JONATHAN MIDDLETON, Clay of Allan, Fearn, Ross-shire.
JAMES MURRAY, Catter House, Drymen.
ROBERT PATERSON of Birthwood, Biggar.
R. G. WARDLAW RAMSAY of Whitehill, Rosewell.
HARRY YOUNG of Cleish Castle, Kinross.
ALEXANDER MURDOCH, Gartcraig, Shettleston.
WALTER ELLIOT, Hollybush, Galashiels.
F. CONNAL ROWAN of Meiklewood, Stirling.
ALLAN R. MACKENZIE, yr. of Kintail, Clunes, Kirkhill, Inverness.
JOHN KEER, Broomhouse, Corstorphine.
W. H. LUMSDEN of Balmedie, Aberdeen.
WILLIAM J. MAXWELL, yr. of Munches, Terraughtie, Dumfries.
JOHN BALLINGALL, Dunbog, Newburgh, Fife.
Hon. ROBT. BAILLIE HAMILTON of Langton, Duns.
DONALD FISHER, Jellyholm, Alloa.
JOHN CRAN, Kirkton, Bunchrew, Inverness.
Sir DAVID BAIRD of Newbyth, Bart., Prestonkirk.
JOHN MILNE, Inverurie.
JAMES HEWITSON, Auchenbainzie, Thornhill.
Sir ROBERT MENZIES of Menzies, Bart., Farleyer, Aberfeldy.
JOHN BAIRD of Knoydart, Inverie House, Isle Ornsay, Skye.
DAVID BUTTAR, Corston, Coupar-Angus.
JAMES PARK, Dechmont, Cambuslang.
Lord ARTHUR CECIL, Orchard Mains, Innerleithen.
PATRICK STIRLING of Kippendavie, Dunblane.
CAMPBELL MACPHERSON GEANT of Drumduan, Forres.
GEORGE R. GLENDINNING, Hatton Mains, Wilkieston.
Sir JOHN INNES of Balveny and Edengight, Bart., Keith.
ROBT. F. DUDGEON, yr. of Cargen, Woodhouselee, Canonbie.

Extraordinary Directors.

THE EARL OF AIRLIE, Cortachy Castle, Kirriemuir.
ANDREW MARTIN, Lord Provost of Perth.
Sir JOHN OGILVY of Inverquhar, Bart., Baldovan House, Dundee.

Sir JAS. THOS. STEWART RICHARDSON of Pitfour, Bart., Perth.
 Sir ALEX. MUTR MACKENZIE of Delvine, Bart., Dunkeld.
 JOHN BALFOUR of Balbirnie, Markinch.
 WILLIAM DINGWALL, Ramornie, Ladybank.
 THOMAS FERGUSON, Kinnochtry, Cupar-Angus.
 JOHN GILMOUR of Lundin, Kilmarn Castle, Cupar-Fife.
 ALEX. MACDUFF of Bonhard, Perth.
 GEORGE J. WALKER, Portlethen, Aberdeen.
 CHAS. HOWATSON, House of Glenbuck, Glenbuck.
 ANDREW ALLAN, Munnock, Dalry, Ayrshire.
 COLIN J. MACKENZIE of Portmore, Eddleston.
 ALEXR. DUDGEON, Easter Dalmany, Queensferry.
 Lieut.-Col. HARE of Calder Hall, Philpston House, Winchburgh.
 JAMES SHAW, Skaithmuir, Coldstream.
 JAMES M'QUEEN of Crofts, Dalbeattie.
 Sir WINDHAM C. J. CARMICHAEL ANSTRUTHER of Anstruther, Bart., Carmichael House, Thankerton.
 JOHN T. S. PATERSON, Plean Farm, Bannockburn.

Office-Staff.

Sir WILLIAM STUART WALKER of Bowland, K.C.B., *Treasurer*.
 Sir G. GRAHAM MONTGOMERY of Stanhope, Bart., *Honorary Secretary*.
 FLETCHER NORTON MENZIES, *Secretary*.
 Rev. JAMES GRANT, D.C.L., D.D., *Chaplain*.
 ANDREW P. AITKEN, D.Sc., *Chemist*.
 WILLIAM HOME COOK, C.A., *Auditor*.
 TODS, MURRAY, & JAMIESON, W.S., *Law Agents*.
 A. N. M'ALPINE, *Consulting Botanist*.
 JAMES D. PARK, *Practical Engineer*.
 THOMAS DUNCAN, *Recorder and Clerk*.
 JOHN MACDIARMID, *Second Clerk*.
 GOURLAY STEELL, R.S.A., *Animal Portrait Painter*.
 WILLIAM WILLIAMS, F.R.C.V.S., *Professor of Veterinary Surgery*.
 THOMAS WALLLEY, M.R.C.V.S., *Professor of Cattle Pathology*.
 WILLIAM BLACKWOOD & SONS, *Publishers*.
 NEILL & COMPANY, *Printers*.
 G. WATERSTON & SONS, *Stationers*.
 JAMES CRICHTON & Co., *Silversmiths and Medallists*.
 JOHN WATERSTON & SONS, *Inspectors of Works*.
 WILLIAM SIMPSON, *Messenger*.

Chairman of Committees.

- | | |
|---|---|
| 1. <i>Argyll Naval Fund,</i> | Admiral MAITLAND DOUGALL of Scotsraig, Tayport. |
| 2. <i>Botanical Department,</i> | Dr CLEGHORN of Stravithy, St Andrews. |
| 3. <i>Chemical Department,</i> | COLIN J. MACKENZIE of Portmore, Eddleston. |
| 4. <i>Cottages and Gardens,</i> | Lieut.-Col. HARE of Calder Hall. |
| 5. <i>Dairy Department,</i> | JAMES M'QUEEN of Crofts, Dalbeattie. |
| 6. <i>District Shows,</i> | F. E. VILLIERS, Closeburn Hall, Thornhill. |
| 7. <i>Finance,</i> | JAMES AULDJO JAMIESON, W.S. |
| 8. <i>General Shows,</i> | Colonel GILLON of Wallhouse, Bathgate. |
| 9. <i>Hall and Chambers,</i> | JOHN ORD MACKENZIE of Dolphinton. |
| 10. <i>Highland Industries, &c.</i> | Sir JAMES H. GIBSON-CRAIG of Riccarton, Bart. |
| 11. <i>Law,</i> | THOMAS GRAHAM MURRAY, W.S. |
| 12. <i>Machinery,</i> | JOHN SCOTT DUDGEON, Longnewton, St Boswells. |
| 13. <i>Ordnance Survey,</i> | ROBERT DUNDAS of Arniston, Gorebridge. |
| 14. <i>Publications, &c.,</i> | ALEXANDER FORBES IRVINE of Drum. |
| 15. <i>Veterinary Department,</i> | JAMES HOPE, East Barns, Dunbar. |

General Meetings.—By the Charter the Society must hold two General Meetings each year, and, under ordinary circumstances, they are held on the third Wednesday of the months of January and June, at one o'clock, in the Society's Hall, 3 George IV. Bridge, for the election of Members and other business.

Meeting at Perth.—By a resolution of the General Meeting on 15th January 1879, a General Meeting of Members is held in the Showyard on the occasion of the Annual Show. This year it will be held at Perth, on Wednesday 27th July, at 2.30 P.M.

General Show at Perth.—26th, 27th, 28th, and 29th July.—Entries close for Implements, 13th May—Stock, 10th June.

Directors' Meetings.—The Board of Directors meet on the first Wednesday of each month from November till June inclusive, at one p.m., and occasionally as business may require, on a requisition by three Directors to the Secretary, or on intimation by him.

Nomination of Directors.—Meetings of Members, for the purpose of nominating Directors to represent the Show Districts on the Board, will be held at the places and on the days after mentioned :—

1. Glasgow, George Hotel, Wednesday, 3rd Aug., at 1.
2. Perth, Royal George Hotel, Friday, 5th August, at 1.
3. Stirling, Golden Lion Hotel, Friday, 12th August, at 1.
4. Edinburgh, 3 George IV. Bridge, Wednesday, 17th Aug., at 2.
5. Aberdeen, Imperial Hotel, Friday, 19th August, at 1.
6. Dumfries, King's Arms Hotel, Wednesday, 24th Aug., at 1.
7. Inverness, Caledonian Hotel, Friday, 26th Aug., at 12.30.
8. Kelso, Secretary's Tent, Ram Sale Ground, Friday, 9th Sept., at 1.

The nomination of Proprietors or other Members paying the higher subscription must be made in the 1st, 2nd, 4th, and 8th Districts; and the nomination of Tenant Farmers or other Members paying the lower subscription, in the 3rd, 5th, 6th, and 7th Districts.

Committee Meetings.

Highland Industries.—First Tuesday in November, at 12 noon.

Machinery.—First Tuesday in November, at 1 P.M.

General Shows.—First Tuesday in November, at 2 P.M., and second Tuesday in June, at 2 P.M.

Publications.—First Wednesday in November, at 12 noon, and first Wednesday in January, 12 noon.

Cottages and Gardens.—First Tuesday in December, at 12 noon.

District Shows.—First Tuesday in December, at 12.30 P.M.

Chemical.—First Tuesday in December, at 2 P.M., and first Tuesday in March, at 2 P.M.

The other Standing Committees—ARGYLL NAVAL FUND, BOTANICAL, DAIRY, FINANCE, HALL AND CHAMBERS, LAW, ORDNANCE SURVEY, and VETERINARY, meet when required.

Examinations for the Society's Diploma and Certificates in Agriculture and Certificates in Forestry are held annually in the end of March or beginning of April.

Examinations for the Society's Bursaries are held annually in October.

COMMITTEES FOR 1887.

1. ARGYLL NAVAL FUND.

Admiral MAITLAND DOUGALL of Scotsraig, R.N., Tayport, *Convener*.
 Lord ELPHINSTONE, Carberry Tower, Musselburgh.
 Admiral Sir WILLIAM EDMONSTONE of Duntreath, Bart.
 The Hon. ROBERT BAILLIE HAMILTON, of Langton, Duns.
 Sir DAVID BAIRD of Newbyth, Bart., Prestonkirk.

2. BOTANICAL DEPARTMENT.

Dr CLEGHORN of Stravithy, St Andrews, *Convener*.
 JOHN SCOTT DUDGEON, Longnewton.
 JAMES M'QUEEN of Crofts, Dalbeattie.
 Professor DICKSON, 11 Royal Circus, Edinburgh.
 R. F. DUDGEON, yr. of Cargen, Woodhouselees, Canonbie.
 Dr A. P. AITKEN, 8 Clyde Street, Edinburgh.
 Professor WALLACE, University, Edinburgh.
 JOHN CRAN, Kirkton, Bunchrew, Inverness.
 DAVID BUTTAR, Corston, Coupar-Angus.
 A. N. M'ALPINE, Minto House, Chambers Street, Edinburgh, *Botanist*.

3. CHEMICAL DEPARTMENT.

C. J. MACKENZIE of Portmore, Eddleston, *Convener*.
 Professor Sir DOUGLAS MACLAGAN, 28 Heriot Row, Edinburgh
 P. B. SWINTON, Holyn Bank, Gifford.
 JOHN SCOTT DUDGEON, Longnewton, St Boswells.
 GEORGE R. GLFNDINNING, Hatton Mains, Wilkieston.
 Lieut.-Col. HARE of Calder Hall, Philpston House, Winchburgh.
 HUGH LINDSAY, Meadowflat, Thankerton.
 ROBERT SHIRRA GIBB, Boon, Lauder.
 THOMAS GIBSON, Haymount, Kelso.
 JAMES M'QUEEN of Crofts, Dalbeattie.
 JOHN MARR, Cairnbrogie, Old Meldrum.
 JONATHAN MIDDLETON, Clay of Allan, Fearn.
 DAVID WILSON, yr. of Carbeth, Killearn.
 Dr ANDREW P. AITKEN, 8 Clyde Street, Edinburgh, *Chemist*.

4. COTTAGES AND GARDENS.

Col. HARE of Calder Hall, Philpston House, Winchburgh, *Convener*.
 JOHN ORD MACKENZIE of Dolphinton, 9 Hill Street, Edinburgh.
 C. J. MACKENZIE of Portmore, Eddleston.
 JOHN KEER, Broomhouse, Corstorphine.
 WALTER ELLIOT, Hollybush, Galashiels.
 JAMES T. S. ELLIOT, yr. of Wolfelée, Hawick.

5. DAIRY DEPARTMENT.

JAMES M'QUEEN of Crofts, Dalbeattie, *Convener*.
 Sir JAMES T. S. RICHARDSON of Pitfour, Bart., Perth.
 Rev. JOHN GILLESPIE, Mouswald Manse, Ruthwell, R.S.O.
 ANDREW ALLAN, Munnock, Dalry, Ayrshire.
 ROBERT PATERSON of Birthwood, Biggar.
 M. J. STEWART of Southwick, M.P., Ardwell.
 JAMES MURRAY, Catter House, Drymen.
 J. M. AITKEN, Ravenshill, Lockerbie.
 JAMES DREW of Craigenallie, Doonhill, Newton-Stewart.
 Dr AITKEN, 8 Clyde Street, Edinburgh.
 R. F. DUDGEON, yr. of Cargen, Woodhouselees, Canonbie.
 JOHN MILNE, Inverurie.
 WM. H. RALSTON, Culmore, Stranraer.
 JOSEPH H. TURNER, The Dean, Kilmarnock.
 ALEX. CROSS of Knockdon.

6. DISTRICT SHOWS.

F. E. VILLIERS, Closeburn Hall, Thornhill, *Convener*.
 Lord ARTHUR CECIL, Orchard Mains, Innerleithen.
 Sir JAMES H. GIBSON-CRAIG of Riccarton, Bart., Currie.
 Lieut.-Col. HARE of Calder Hall, Philipston House, Winchburgh.
 J. T. S. PATERSON, Plean Farm, Bannockburn.
 JAMES M'QUEEN of Crofts, Dalbeattie.
 ROBERT PATERSON of Birthwood, Biggar.
 WALTER ELLIOT, Hollybush, Galashiels.
 W. H. LUMSDEN of Balmedie, Aberdeen.
 JAMES PARK, Dechmont, Cambuslang.
 W. J. MAXWELL, jr. of Munches, Terraughtie, Dumfries.
 NIVEN MATTHEWS, Newton-Stewart.
 JOHN CRAN, Kirkton, Bunchrew, Inverness.
 CHARLES HOWATSON, House of Glenbuck, Glenbuck.
 Rev. JOHN GILLESPIE, Mouswald Manse, Ruthwell, R.S.O.
 ALEXANDER MURDOCH, Gartcraig, Shettleston.
 JOHN MARR, Cairnbrogie, Old Meldrum.
 C. MACPHERSON GRANT of Drumduan, Forres.
 DAVID BUTTAR of Corston, Coupar-Angus.
 ALEXANDER MACDUFF of Bonhard, Perth.
 PATRICK STIRLING of Kippendavie, Stirling.

7. FINANCE.

JAMES AULDJO JAMIESON, W.S., 66 Queen Street, Edinburgh, *Convener*.
 Sir WILLIAM S. WALKER of Bowland, K.C.B., *Treasurer*.
 Sir G. GRAHAM MONTGOMERY of Stanhope, Bart., *Honorary Secretary*.
 Sir JAMES H. GIBSON-CRAIG of Riccarton, Bart.
 PATRICK BLAIR, W.S., 7 York Place.
 ROBERT PATERSON of Birthwood, Biggar.
 W. J. MAXWELL, jr. of Munches, Terraughtie, Dumfries.
 Rev. JOHN GILLESPIE, Mouswald Manse, Ruthwell, R.S.O.
 PATRICK STIRLING of Kippendavie, Dunblane.
 WILLIAM HOME COOK, C.A., 1 Albyn Place, *Auditor*.

8. GENERAL SHOWS.

Colonel GILLON of Wallhouse, Bathgate, *Convener*.
 Lord ARTHUR CECIL, Orchard Mains, Innerleithen, *Vice-Convener*.
 Viscount STORMONT, Seone Palace, Perth.
 Sir ROBERT MENZIES of Menzies, Bart., Farleyer, Aberfeldy.
 Sir JAMES H. GIBSON-CRAIG of Riccarton, Bart.
 Sir JOHN INNES of Edengight, Bart., Keith.
 WILLIAM FORD, Fentonbarns, Drem.
 Rev. JOHN GILLESPIE, Mouswald Manse, Ruthwell, R.S.O.
 JAMES HOPE, East Barns, Dunbar.
 C. J. MACKENZIE of Portmore, Eddleston.
 JAMES CUNNINGHAM, Tarbreoch, Dalbeattie.
 ANDREW ALLAN, Munnoch, Dalry, Ayrshire.
 FRED. E. VILLIERS, Closeburn Hall, Thornhill.
 JAMES M'QUEEN of Crofts, Dalbeattie.
 ROBERT PATERSON of Birthwood, Biggar.
 ADAM SMITH, Camelon House, Falkirk.
 THOMAS ELLIOT, Blackhaugh, Galashiels.
 JONATHAN MIDDLETON, Clay of Allan, Fearn.
 J. M. MARTIN of Auchendennan, Alexandria, N.B.
 WILLIAM J. MAXWELL, jr. of Munches, Terraughtie, Dumfries.
 P. F. CONNALL ROWAN of Meiklewood, Stirling.
 JOHN MARR, Cairnbrogie, Old Meldrum.
 W. H. LUMSDEN of Balmedie, Aberdeen.
 ALLAN R. MACKENZIE, jr. of Kintail, Clunes, Kirkhill, Inverness.
 JOHN KERR, Broomhouse, Corstorphine.

JOHN CRAN, Kirkton, Bunchrew, Inverness.
 ALEXANDER MURDOCH, Gartcraig, Shettleston.
 CHARLES HOWATSON, House of Glenbuck, Glenbuck.
 JAMES T. S. ELLIOT, yr. of Wolfelee, Hawick.
 NIVEN MATTHEWS, Newton-Stewart.
 JAMES PARK, Dechmont, Cambuslang.
 DAVID BUTTAR, Corston, Coupar-Angus.
 THOMAS FERGUSON, Kinnochtry, Coupar-Angus.
 JAMES D. PARK, Engineer, Greenside Lane, Edinburgh.
 STEWARDS OF GENERAL SHOWS, *ex officio*.

9. HALL AND CHAMBERS.

JOHN ORD MACKENZIE of Dolphinton, *Convener*.
 SIR WILLIAM S. WALKER of Bowland, K.C.B.
 ROBERT PATERSON of Birthwood, Biggar.
 COLIN J. MACKENZIE of Portmore, Eddleston.
 JOHN KERR, Broomhouse, Corstorphine.
 JOHN T. S. PATERSON, Plean Farm, Bannockburn.

10. HIGHLAND INDUSTRIES AND FISHERIES.

SIR JAMES H. GIBSON-CRAIG of Riccarton, Bart., *Convener*.
 SIR JAMES RAMSAY GIBSON-MAITLAND of Barnton, Bart.
 SIR KENNETH S. MACKENZIE of Gairloch, Bart.
 LIEUT.-GENERAL BURROUGHS of Rousay, C.B., Orkney.
 ALEXANDER FORBES IRVINE of Drum.
 ARCHIBALD YOUNG, 22 Royal Circus, Edinburgh.
 ALEXANDER HENDERSON of Stemster, 2 Glencain Crescent, Edinburgh.
 WILLIAM ANDERSON SMITH, Ledaig, Argyllshire.
 DUNCAN FORBES of Culloden, Inverness.
 JOHN CRAN, Kirkton, Bunchrew, Inverness.

11. LAW.

THOMAS GRAHAM MURRAY, W.S., 11 Randolph Crescent, *Convener*.
 JOHN ORD MACKENZIE of Dolphinton, W.S., Edinburgh.
 SIR WILLIAM S. WALKER of Bowland, K.C.B.
 HEW CREIGHTON, S.S.C., 13 Nelson Street, Edinburgh.
 JAMES AULDJO JAMESON, W.S., 66 Queen Street, Edinburgh.
 PATRICK BLAIR, W.S., 7 York Place, Edinburgh.
 W. J. MAXWELL, yr. of Munches, Terraghtie, Dumfries.

12. MACHINERY.

JOHN SCOTT DUDGEON, Longnewton, St Boswells, *Convener*.
 JOHN MUNRO, St Cuthberts, Melrose.
 P. B. SWINTON, Holyn Bank, Gifford.
 C. J. MACKENZIE of Portmore, Eddleston.
 JOHN KEMP, Stirling.
 JAMES A. R. MAIN, Clydesdale Iron Works, Possil Park, Glasgow.
 JOHN MARSHALL, Maybole.
 JOHN YOUNG, jun., Ayr.
 ALEXANDER DUDGEON, Easter Dalmeny, Queensferry.
 JAMES SHAW, Skaithmuir, Coldstream.
 J. T. S. PATERSON, Plean Farm, Bannockburn.
 NIVEN MATTHEWS, Newton-Stewart.
 JAMES T. S. ELLIOT, yr. of Wolfelee, Hawick.
 WALTER ELLIOT, Hollybush, Galashiels.
 JOHN KERR, Broomhouse, Corstorphine.
 JOHN MILNE, Inverurie.
 DONALD FISHER, Jellyholm, Alloa.
 JONATHAN MIDDLETON, Clay of Allan, Fearn.
 ALEXANDER MACDUFF of Bonard, Perth.
 JAMES D. PARK, Greenside Lane, Edinburgh, *Practical Engineer*.

13. ORDNANCE SURVEY.

ROBERT DUNDAS of Arniston, *Convener*.
 C. J. MACKENZIE of Portmore, Eddleston.
 Sir WILLIAM S. WALKER of Bowland, K.C.B.
 WILLIAM J. MAXWELL, yr. of Munches, Terraughtie, Dumfries.

14. PUBLICATIONS AND PREMIUMS FOR REPORTS.

ALEXANDER FORBES IRVINE of Drum, *Convener*.
 Sir WILLIAM S. WALKER of Bowland, K.C.B.
 ROBERT SCOT SKIRVING, 29 Drummond Place, Edinburgh.
 P. B. SWINTON, Holyn Bank, Gifford.
 Dr CLEGHORN of Stravithy, St Andrews.
 C. J. MACKENZIE of Portmore, Eddleston.
 Rev. JOHN GILLESPIE, Mouswald Manse, Ruthwell, R.S.O.
 WILLIAM MACDONALD, Editor, *North British Agriculturist*, Edinburgh.
 F. E. VILLIERS, Closeburn Hall, Thornhill.
 JOHN SCOTT DUDGEON, Longnewton, St Boswells.
 JAMES T. S. ELLIOT, yr. of Wolflea, Hawick.
 WILLIAM J. MAXWELL, yr. of Munches, Terraughtie, Dumfries.
 Dr AITKEN, 8 Clyde Street, Edinburgh.
 JAMES SHAW, Skaithmuir, Coldstream.
 P. F. CONNALL ROWAN of Meiklewood, Stirling.
 JAMES M'Queen of Crofts, Dalbeattie.
 C. MACPHERSON GRANT of Drumduan, Forres.

15. VETERINARY DEPARTMENT.

JAMES HOPE, East Barns, Dunbar, *Convener*.
 Lord ARTHUR CECIL, Orchard Mains, Innerleithen.
 Sir ROBERT MENZIES of Menzies, Bart.
 Sir JAMES H. GIBSON-CRAIG of Riccarton, Bart.
 Colonel GILLON of Wallhouse, Bathgate.
 Sir WILLIAM S. WALKER of Bowland, K.C.B.
 Lieut.-Colonel HARE of Calder Hall, Philpston House, Winchburgh.
 JONATHAN MIDDLETON, Clay of Allan, Fearn, Ross-shire.
 JAMES MURRAY, Catter House, Drymen.
 ALLAN R. MACKENZIE, yr. of Kintail, Clunes, Kirkhill, Inverness.
 PATRICK STIRLING of Kippendavie, Dunblane.
 WILLIAM J. MAXWELL, yr. of Munches, Terraughtie, Dumfries.
 Rev. JOHN GILLESPIE, Mouswald Manse, Ruthwell.
 W. H. LUMSDEN of Balmedie, Aberdeen.
 Professor WILLIAMS, Professor of Veterinary Surgery to the Society.

REPORTS OF GENERAL MEETINGS.

Rev. JOHN GILLESPIE, Mouswald Manse, Ruthwell, R.S.O.
 ALEXANDER F. IRVINE of Drum, 25 Castle Terrace, Edinburgh.
 COLIN J. MACKENZIE of Portmore, Eddleston.
 THE SECRETARY.

The President, Vice-Presidents, and Honorary Secretary are members *ex officio* of all Committees.

AGRICULTURAL EDUCATION.

CERTIFICATES AND DIPLOMA IN AGRICULTURE.

COUNCIL ON EDUCATION.

By a Supplementary Charter under the Great Seal, granted in 1856, the Society is empowered to grant Diplomas.

Members of Council named by Charter.

The PRESIDENT of the HIGHLAND AND AGRICULTURAL SOCIETY—*President.*
The LORD JUSTICE-GENERAL—*Vice-President.*

The LORD ADVOCATE.
The DEAN OF FACULTY.
The PROFESSOR OF AGRICULTURE.
The PROFESSOR OF ANATOMY.

The PROFESSOR OF BOTANY.
The PROFESSOR OF CHEMISTRY.
The PROFESSOR OF NATURAL HISTORY.

Members of Council nominated by Society.

The MARQUIS OF LOTHIAN, K.T.
Sir WILLIAM S. WALKER of Bowland, K.C.B.
ROBERT DUNDAS of Arncliffe.
JOHN MUNRO, St Cuthberts Melrose.

JAS. HOPE, East Barns, Dunbar.
A. CAMPBELL SWINTON of Kimmerghame.
Rev. JOHN GILLESPIE, Mouswald, Ruthwell, R.S.O.

Board of Examiners.

1. *Science and Practice of Agriculture.*—Professor WALLACE, University, Edinburgh; JOHN MUNRO, St Cuthberts, Melrose; JAMES HOPE, East Barns, Dunbar; and JAS. BIGGAR, yr. of Chapelton, Dalbeattie.
2. *Botany.*—Dr CLEGHORN of Stravithy, St Andrews, and A. N. M'ALPINE, Edinburgh.
3. *Chemistry.*—Dr A. P. AITKEN, Edinburgh, and Dr WILLIAM CRAIG, Edinburgh.
4. *Natural History.*—Professor COSSAR EWART, Edinburgh, and Dr RAMSAY H. TRAQUAIR, Edinburgh.
5. *Veterinary Science.*—Professor WILLIAMS, Edinburgh, and FINLAY DUN, V.S., Edinburgh.
6. *Field Engineering.*—DAVID ALAN STEVENSON, C.E., Edinburgh, and A. W. BELFRAGE, C.E., Edinburgh.
7. *Book-keeping.*—WILLIAM HOME COOK, C.A., Edinburgh, and JOHN BRODIE, C.A., Edinburgh.

Standing Acting Committee.

The LORD JUSTICE-GENERAL—*Convener.*

The PROFESSOR OF AGRICULTURE.
The PROFESSOR OF BOTANY.
The PROFESSOR OF CHEMISTRY.
JOHN MUNRO, St Cuthberts, Melrose.

A. CAMPBELL SWINTON of Kimmerghame.
Rev. JOHN GILLESPIE, Mouswald.

BYE-LAWS.

I. That, in terms of the Charter, the Society shall nominate seven members to act on the Council on Education.

II. That the Council shall appoint a Board of Examiners on the following subjects:—Science and Practice of Agriculture; Botany; Chemistry; Natural History; Veterinary Science; Field Engineering; and Book-keeping.

III. That the examinations shall be both written and oral, that the value of the answers shall be determined by numbers, and that the oral examinations shall be public.

IV. That there shall be three examinations,* to be styled respectively the "Second Class Certificate Examination," the "First Class Certificate Examination," and the "Diploma Examination."

V. That to pass the "Second Class Certificate Examination," a Candidate must be acquainted with the science and practice of agriculture, elementary chemistry, field engineering, and book-keeping; and that a certificate in the following terms, bearing the corporate seal and arms of the Society, signed by the President or Vice-President of the Council on Education, the Examiners, and by the Secretary, shall be granted to a candidate passing this examination:—

"These are to certify that on the _____, A. B. was examined, and has been found to possess a knowledge of the science and practice of agriculture, elementary chemistry, field engineering, and book-keeping."

VI. That to pass the "First Class Certificate Examination," a candidate must be acquainted with the science and practice of agriculture, botany, chemistry, natural history, veterinary science, field engineering, and book-keeping; and that a certificate in the following terms, bearing the corporate seal and arms of the Society, signed by the President or Vice-President of the Council on Education, the Examiners, and by the Secretary, shall be granted to candidates passing this examination:—

"These are to certify that on the _____, A. B. was examined, and has been found to possess a knowledge of the science and practice of agriculture, botany, chemistry, natural history, veterinary science, field engineering, and book-keeping."

VII. That to pass the "Diploma Examination," a candidate must possess a *thorough knowledge* of the science and practice of agriculture, botany, chemistry, natural history, veterinary science, field engineering, and book-keeping; and that a diploma in the following terms, bearing the corporate seal and arms of the Society, and signed by the President and Vice-President of the Council on Education, the Examiners, and by the Secretary, shall be granted to candidates passing this examination:—

"These are to certify that on the _____, A. B. was examined, and has been found to be proficient in the science and practice of agriculture, botany, chemistry, natural history, veterinary science, field engineering, and book-keeping."

VIII. That each successful candidate for the Society's Agricultural Diploma shall thereby become eligible to be elected a free life member of the Society.

IX. That the Society shall grant annually fifteen bursaries, viz. :—Five of £10 each, and ten of £20 each,† to be competed for by candidates intend-

* It has been resolved that, under ordinary circumstances, the examination shall be held annually in the end of March or beginning of April, candidates being required to lodge intimation before the 10th of March.

† Applicants for all the Bursaries must be qualified by birth or residence in Scotland, and the Council are entitled to consider each case on its own merits—their decision to be final.

ing to pursue agriculture or estate management, and who pass examinations in chemistry, physical geography, botany, and geology.

X. That the £10 bursaries shall be tenable for one year, to enable the holders to obtain further preparatory study at schools; and the £20 bursaries* to be tenable for the same period, for the purpose of enabling the holders to take the classes at the University of Edinburgh necessary to qualify for the Society's certificates or diploma.

XI. That the examination shall be conducted by examiners appointed by the Council. That there shall be one examination for the fifteen bursaries, and the value of the answers determined by numbers. The ten candidates gaining the highest numbers to receive the £20 bursaries, provided they are up to the required standard for these bursaries; and the five next in order the £10 bursaries, if also up to the required standard for the second class bursaries.

XII. That a Standing Acting Committee of the Council on Agricultural Education shall be appointed by the Directors.

Note.—The list of Diploma Free Life Members is published in vol. xix. of the Society's *Transactions*.

The following have passed—

FOR THE FIRST CLASS CERTIFICATE.

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|---|---|
| 1867. J. C. BOWSTEAD, M.R.A.C., Halkthorpe Hall, Penrith. | 1883. PATRICK L. MAITLAND, Pertymead House, Bath. |
| 1868. JAMES TAYLOR, Clashfarquhar, Aberdeen. | 1883. HENRY B. MAYNE, Brantridge, Balcomb, Sussex. |
| 1873. R. C. B. WILLIS, M.R.A.C., Cheltenham. | 1883. ROBERT ROUSE PETER, Buenos Ayres, South America. |
| 1875. GEORGE H. CATT, 44 Middle Street, Brighton. | 1884. W. A. SANDERS, Sanders Park, Co. Cork. |
| 1875. ROBERT EWING, Reporter, late Edinburgh. | 1884. W. STIRLING, Dean's Court, St Andrews. |
| 1875. JOHN SCOTT, 63 Princes Street, Edinburgh. | 1885. HENRY CHAVASSE, Castle Townshend, Cork. |
| 1876. CECIL C. BAKER, 2 Bloomsbury Place, London. | 1885. A. R. DUNNET, Auchengill, Keiss, Caithness. |
| 1876. PEGGY H. CATHOART, 16 Oakley Square, London. | 1885. ALEX. ELWARD, 1 Macdonald St., Dundee. |
| 1876. JOHN M'CAIG, Kilhilt, Stranraer. | 1885. C. H. HOOPER, Elmleigh, Beckenham, Kent. |
| 1876. C. E. M. RUSSELL, Ballielisk, Dollar. | 1885. JOHN M. RAMSAY, Hope Park, Cupar-Fife. |
| 1878. W. M. ANDERSON, Pirnaton, Stow. | 1886. BASIL S. CAVE, Queensberry House, Richmond, Surrey. |
| 1879. M. FALCON, Stainburn, Workington. | 1886. ED. S. DAVIES, Church Hill Villa, Claverley, Bridgenorth, Salop. |
| 1880. WILLIAM BROWN, Watten Mains, Caithness. | 1886. EDGAR DUDLEY, 37 Thornhill Road, Barnsbury, London. |
| 1880. ALEX. INGLIS, Cloverport, Kentucky, U.S.A. | 1886. ANDREW T. L. DUNLOP, Morriston, Maybole. |
| 1880. JAMES M'LAGGAN, Cobbleheugh, Dinnet, Aberdeenshire. | 1886. ROBERT HAIG, Dollarfield, Dollar. |
| 1880. R. A. MALLOCH, Balhaldie, Braco, Perthshire. | 1886. JOHN EDWIN MACKENZIE, 15 Albany Street, Edinburgh. |
| 1881. DANIEL BAIN, Wick. | 1886. JAMES REENIE, Wellercoft, Helensburgh. |
| 1881. ALFRED HARDIE, Oxford House, Stockport. | 1886. WILLIAM R. RICHARDSON, Collyhurst Lodge, Whalley Range, Manchester. |
| 1882. DANIEL FINLAYSON, Wick. | 1886. WILLIAM SOMERVILLE, Cormistoun, Biggar. |
| 1882. BENJAMIN HEPBURN, Preston Mains, Prestonkirk. | 1886. C. G. FREER THONGER, Lordswood Place, Harborne, Staffordshire. |
| 1882. J. RODGER, Mertoun, St Boswells. | |
| 1883. ALEX. H. GIBSON, Kirkcaldy. | |
| 1883. ARTHUR HERBERT KERR, Crookham, Farnham. | |

* The £20 bursaries are not due till the holder presents himself for examination for the certificate or diploma.

FOR SECOND CLASS CERTIFICATE.

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|--|---|
| 1876. ANDREW CATTON, Couston, Aberdour, Fife. | 1881. JOHN M. LITTLE, jun., Bonnington House, Blackheath, London. |
| 1876. JOHN FLEMING, Coates, Penicuik. | 1881. SAMUEL NAISMITH, Edinburgh. |
| 1877. JOHN T. T. SCOLAR, Edinburgh. | 1881. JOHN S. PETER, 5 Ravelston Place, Edinburgh. |
| 1877. ROBERT H. WALLACE, Newton Hall, Windygates. | 1883. HERBERT G. AYLEN, Hazeldean Farm, St Albans. |
| 1878. JAMES GILLESPIE, Halfmark, Corssock, Dalbeattie. | 1883. JOHN K. LEDINGHAM, Slap, Turriff. |
| 1878. JAMES S. INNES, Edinburgh. | 1884. ALEX. JOHNSTONE, Edinburgh. |
| 1879. ROBERT M. TRAILL, Hobbister, Orkney. | 1884. W. M'LENNAN, Lewis Estate Office, Stornoway. |
| 1880. ANDREW CHAPMAN, Breckonhill, Lockerbie. | 1885. DONALD BRIMS, Knapperfield, Watten. |
| 1880. JAMES SUTHERLAND, Wick. | 1886. ROBERT D. DAVIDSON, Cogle, Watten, Caithness. |
| 1880. WILLIAM R. TAIT, Wick. | 1886. DANIEL STERLE, Merkland, New Cumnock. |
| 1880. FRANCIS UNDERWOOD, Sywell Hall, Northampton. | |

SYLLABUS OF EXAMINATION

FOR CERTIFICATES AND DIPLOMA.

I.—SCIENCE AND PRACTICE OF AGRICULTURE.

1. Geological strata—surface geology—formation of soils—their classification—chemical and physical characters and composition—suitability for cultivation. 2. The principle of rotations—rotations suitable for different soils—systems of farming. 3. The composition of (a) manures—general and special—amounts used per acre—period and mode of application. The composition of (b) feeding substances—their suitability for different classes of farm stock—considerations affecting their use. 4. "How crops grow"—our farm crops—their cultivation—diseases—insect injuries and remedies—their chemical composition. The formation and management of plantations. 5. The principles on which drainage, irrigation, and warping operations should be based and carried out. The application of lime—marl—clay, &c. 6. Meteorology, or the laws of climate as affecting plant life—the influence of light and heat on cultivation—of absorption and retention of heat and moisture—of porosity and capillarity in soils. 7. The breeding, rearing, feeding, and general treatment of farm stock—the different breeds of horses, cattle, sheep, and pigs—their characteristics—the districts where they are generally met with. 8. The machines and implements used in farming—their uses, prices, and the principal points to be attended to in their construction. 9. The "prime movers," or sources of power used in agriculture: man—horse—wind—water—steam—their relative values and advantages. *Text-books*—Morton's "Cyclopedia of Agriculture," Blackie & Son; Wallace's "Farm Live Stock," Oliver & Boyd; Harris's "Cheese and Butter Maker's Handbook," Dunn & Wright; McConnell's "Agricultural Note-Book," Crosby, Lockwood, & Co.; "Our Farm Crops," Blackie & Son; "How Crops Grow," Macmillan & Co.; Warington's "Chemistry of the Farm," Bradbury, Agnew, & Co.; McAlpine's "Grasses"; Geikie's "Outlines of Geology."

II.—BOTANY.

I. Nutritive Organs of Plants—root, stem, leaves. Functions of roots. Various kinds of stem, with examples. Use of the stem. Structure of leaves. Different kinds of leaves. Arrangement and functions of leaves. 2. Reproductive Organs—Flower and its parts. Arrangements of the whorls

of the flower—calyx, corola, stamens, pistil. Ovule. Mature pistil or fruit. Pruning and grafting. Seed. Young plant or embryo. Sprouting of the seed, or germination. 3. General Principles of Classification—meaning of the terms Class, Order, Genus, and Species. Illustrations of natural orders taken from plants used in agriculture such as grain-crops, grasses, clovers, vetches, turnips, mangel-wurzel, peas, beans, &c. Practical examination in fresh specimens and models; some of the latter may be seen in the Museum, at the Royal Botanic Garden, which is open daily to the public, free. *Text-book*—Balfour's "Elements of Botany," A. & C. Black, 1876, price 3s. 6d.

III.—CHEMISTRY.

The general principles of chemical combination. The chemistry of the more commonly occurring elements, and their more important compounds. The chemical processes concerned in agriculture generally. The changes which take place in the germination, growth, and maturation of plants, in the weathering and manuring of soils, &c. The composition and chemical character of the common mineral manures. *Text-books*—Roscoe's "Lessons in Elementary Chemistry," Macmillan & Co., London, price 4s. 6d. Johnston and Cameron's "Elements of Agricultural Chemistry and Geology." Johnston's "How Crops Grow," Macmillan & Co., London. Warington's "Chemistry of the Farm," Bradbury, Agnew, & Co., London.

IV.—NATURAL HISTORY.

1. ZOOLOGY.

1. The Primary Divisions of the Animal Kingdom, with examples of each. 2. The Vertebrate Kingdom. The peculiarities and functions of the alimentary canal, distinguishing the Ruminants. 3. The orders—Hymenoptera, Diptera, and Coleoptera—with examples of insects injurious to farm crops belonging to each of the orders—the preservation of birds which prey upon these insects, drawing a distinction between those which are beneficial and those which are destructive to crops. *Text-book*—Nicholson's "Introductory Text-book of Zoology," William Blackwood & Sons, Edinburgh and London.

2. GEOLOGY.

4. The various strata forming the earth's crust in their order of deposition. 5. Their influence on the surface soils of the country. 6. The meaning and application of Disintegration, Drift, Alluvium, Dip, Strike, Fault. Page's "Introductory Text-Book of Geology" and Lyell's "Students' Elements of Geology."

V.—VETERINARY SCIENCE.

1. Anatomy of the digestive organs of horse and ox, describing their structural differences. 2. The process of digestion in the above animals, and food most proper for each in quantity and quality. 3. The management of stock before, at, and after parturition. The time of utero-gestation in the domesticated animals. 4. The general principles to be followed in the treatment of very acute disease, before assistance of the veterinary surgeon can be procured.

VI.—FIELD ENGINEERING.

1. Land-Surveying with the Chain. 2. Mensuration of Areas of Land, in Imperial and Scotch acres, from a Chain Survey or from a Plan. 3. Levelling with the ordinary levelling instrument and staff, and calculating levels and gradients. *Text-books*—"Rudimentary Treatise on Land and Engineering Surveying," by T. Baker, C.E.; "Weale's Series," price 2s. part i. chaps. 1, 2, 3, and 6, and part ii. chap. 1, to be read.

VII.—BOOK-KEEPING.

1. Questions in Practice and Proportion. 2. Book-keeping—Describe books to be kept; give examples—taking of stock. *Text-book*—Stephen's "Practical System of Farm Book-keeping," Wm. Blackwood & Sons, Edinburgh, price 2s. 6d.

EXAMINATION FOR BURSARIES.

Candidates are examined in the Elements of Botany, Chemistry, Physical Geography, and Geology. *Text-books*—Balfour's "Elements of Botany," Roscoe's "Lessons in Elementary Chemistry," Page's "Introductory Text-Book of Geology," Geikie's "Primer of Physical Geography," and Lyell's "Students' Elements of Geology."

It has been resolved that, under ordinary circumstances, the examinations shall be held annually in the end of October, and candidates must enter their names with the Secretary before the 10th of that month, and produce the necessary certificates from the teachers of the schools they have attended.

The bursaries are open to candidates not less than fourteen years of age.

EXAMINATION PAPERS, 1886.

MARKS :—100 is the maximum in all the subjects. In Agriculture, 75 to pass for the Diploma, 60 for the First-Class Certificate, and 50 for the Second-Class Certificate. In all the other subjects, 40 to pass for the Diploma, 25 for the First-Class Certificate, and 20 for the Second-Class Certificate.

SCIENCE AND PRACTICE OF AGRICULTURE.

1. Name the geological formations of the district in which you have studied practical Agriculture, and describe the characters of the soils resting upon them.

2. Give a suitable rotation for arable land in East Lothian, with reasons why the crops are arranged in the order stated.

3. Describe the laying out of a field of heavy land to permanent pasture, giving (1) preparation of the land, (2) a suitable "Seeds" mixture, and (3) after-treatment for 2 years.

4. What are the valuable ingredients found in a "General Manure"? Mention the common "Special Manures" in which these ingredients are found, and what is an ordinary dressing of each per acre?

5. How would you feed a farm horse for a year? Calculate the cost, and show how you make it out; and describe a humane method of breaking horses.

6. Give the points of a shorthorn bull.

7. Describe a good system of feeding a dairy cow, stating kinds and quantities of food given. What would be a good average yield of—(1) milk, (2) butter, and (3) cheese, from a cow fed in your way?

8. Give the management of 200 fattening "tegs" or "hoggs" (naming the breed) from the time they are weaned till they are fit to kill. What food would they eat, when would you kill them, and what weight would they scale when dressed for market?

N.B.—All the questions to be answered.

(*Three hours allowed.*)

BOTANY.

1. Describe the origin, function, and growth of roots. In what particulars do they differ from stems? In what way does root pruning induce fertility?

2. In what form is starch commonly found in vegetable tissues? By what characters would you recognise it?

3. Enumerate the principal forms of inflorescence, giving their special names, and an example of each.

4. Describe the fruit of the larch, mulberry, oak, whin, and hornbeam.

5. Explain in what respects the nutrition of *terrestrial*, *epiphytic*, and *parasitic* plants differ, and give examples of each class.

6. Give two examples (genus and species) of each of the following Natural Orders:—

Coniferae.	Malvaceae.
Leguminosae.	Rosaceae.
Amentiferae.	Liliaceae.

(*One and a half hour allowed.*)

CHEMISTRY.

1. What are the following substances composed of:—

Sal ammoniac.	Blue vitriol.
White lead.	Washing soda.
Black lead.	Alum.
Sugar of lead.	Epsom salt.
Cream of tartar.	Pipe clay.

2. Mention the chief ingredients contained in milk, and shortly describe their chemical characters.

3. Enumerate the chief products obtained when wood is distilled.

4. I am offered sulphate of ammonia at 10s. per unit of ammonia, and another sample (containing 90 per cent. sulphate of ammonia) at £10 per ton; what advantage do I gain by buying one rather than the other?

H=1; N=14; S=32; O=16; Na=23.

(*One and a half hour allowed.*)

NATURAL HISTORY.

ZOOLOGY.

1. Explain the phenomenon known as "measly pork," giving a short account of the parasite which produces it.

2. Give the distinguishing character of the order Diptera, including the nature of their metamorphosis, and name three examples of insects belonging to this order which are of interest to the agriculturist.

3. What is the general structure of a mammalian tooth? and explain the terms "homodont," "heterodont," "monophyodont," "diphyodont."

4. Summarise the distinctions between the groups "Perissodactyle" and "Artiodactyle," giving examples of each.

GEOLOGY.

1. Give the chemical composition and general appearance of the following minerals:—Gypsum, calcite, quartz, galena.

2. Explain the terms vein, seam, false bedding, slaty cleavage, joint.

3. Explain the origin of coal, and state in what geological horizons workable coal occurs in the British Islands.

4. What groups of fossil shells are especially characteristic of the Mesozoic rocks of Great Britain?

(One and a half hour allowed.)

VETERINARY SCIENCE.

1. Amongst what cows does milk fever occur? Describe its symptoms and treatment.

2. What is the origin of foot-and-mouth disease in this country, by what symptoms is it recognised, and what are the duties of cattle-owners on its appearance amongst their stock?

3. What is scab in sheep? Describe its causes, symptoms, and treatment.

4. What are the most common causes of diseases of the air-passages in farm horses?

5. What is "swine plague"? Give its causes, symptoms, and the method to be pursued on its appearance in a piggery.

6. Describe the most humane method of preparing and castrating a colt; also describe the diseases which may follow castration, and their treatment.

(One and a half hour allowed.)

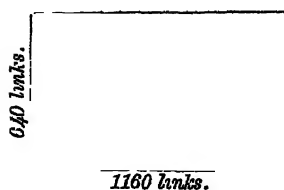
FIELD ENGINEERING.

NOTE.—Candidates must work out the questions on sheets of paper which will be supplied to them, which sheets must be signed by the Candidates, and lodged, along with this Examination Paper, with the Secretary. The Answers to the questions, excepting Nos. 4 and 7, are also to be filled in on this paper.

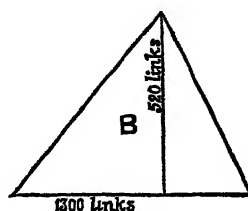
NOTE OF IMPERIAL MEASURE.

10,000 square links	=	1 square chain.		
625 do.	=	0.0625 do.	=	1 pole.
25,000 do.	=	2.5 do.	=	40 do. = 1 rood.
100,000 do.	=	10 do.	=	160 do. = 4 do. = 1 acre.

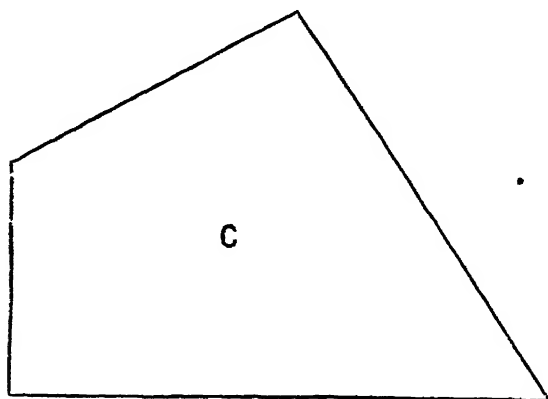
The imperial is to the Scotch acre as 1 : 1.261 nearly.



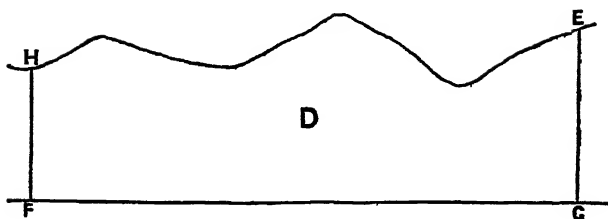
Question No. 1.—Calculate the area of the right-angled enclosure A, in imperial acres, roods, and poles, and also in acres and decimals.



Question No. 2.—Calculate the area of the triangular enclosure B, in acres and decimals.



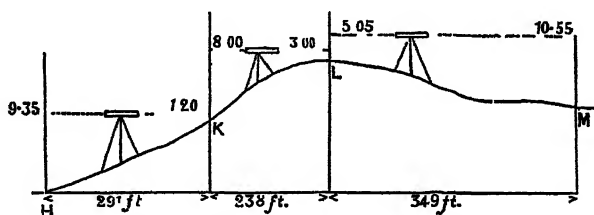
Question No. 3.—Measure by the scale on the next page the enclosure C, mark the measurements in links on the paper, and calculate from them the area in imperial acres and decimals.



Question No. 4.—In the figure D, HE is an irregular boundary; FG a straight station-line; FH and EG perpendiculars to FG. Measure by the scale, and mark in links on the paper the measurements required in order to survey the boundary HE.

Question No. 5.—Calculate from these measurements the area of the piece of land FHEG, in imperial acres and decimals.

Question No. 6.—The contents of a piece of land being 520 Scotch acres, required the area in imperial acres and decimals.



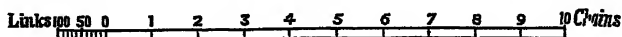
Question No. 7.—Write down, as if in a level-book, the staff-readings in feet and decimals shown in the above sketch section; then reduce the levels beginning at H, so as to calculate the heights of K, L, and M above H; all in feet and decimals.

Question No. 8.—Calculate the gradients or rates of inclinations of the ground between the points H and K, K and L, and L and M.

Answer { H and K =
K and L =
L and M =

SCALE OF IMPERIAL CHAINS FOR FIGURES C AND D.

N.B.—The measurements to be taken to the accuracy of the nearest five links.



BOOK-KEEPING.

1. Reduce to square feet 1 acre 3 roods 20 poles.
2. A field containing 9 acres 3 roods 15 poles was turned over by 7 ploughs in 3 days; how much did each turn over, assuming that they did equal work?
3. Bought 10 tons of potatoes at 60s. per ton; sold one-third of the purchase at 12s. 6d. per boll, and one-fourth of the whole purchase at £3, 15s. per ton; what proportion of the purchase is left, and valuing these at cost price, what profit has been made (5 bolls to the ton)?
4. Reapers agree to cut a field of standing crop at 13s. per acre, with 2s. 6d. extra per acre for one-third of the field which has been laid down by storms. The area of the field is 14 acres 1 rood 21 poles; what is the cost of cutting the crop?
5. If 10 horses and 132 sheep can be fed for 8 days for £50, 10s., what sum will keep 15 horses and 148 sheep for the same time, supposing 5 horses eat as much as 15 sheep?
6. A man spends £15, 8s. every 35 days, and saves £100 a year; what is his annual income?
7. Name the different books which a farmer ought to keep, so as to have an accurate note of his transactions.

* The following entries appear in a farmer's note-book, and are to be transferred to the proper books kept at the farm:—

1886.	January 1—	Cash in hand,	.	.	.	£35	0	0
"	"	Cash in bank,	.	.	.	315	0	0
"	"	Value of implements,	.	.	.	300	0	0
"	"	Value of stock—						
		8 horses . . at	£20	0	0			
		21 cows . . "	12	0	0			
		14 calves . . "	4	0	0			
		22 pigs . . "	2	10	0			
"	"	Value of corn—						
		11 stacks wheat, of 20 qrs. each, at 36s. per qr.						
		10 " barley, of 30 " 20s. "						
		17 " oats, of 40 " 16s. "						
"	"	Value of turnips—						
		100 acres at 70s. per acre.						
"	"	Outstanding accounts due to me—						
		John Thomson, £50.						
		James Gray, £42.						
"	"	Outstanding accounts due by me—						
		Half-year's rent due at Whitsunday 1886, £500.						
1886.	January 3—	Cash received from J. Herdman for						
		60 qrs. wheat at 37s. 4d. per qr.,				£112	0	0
"	"	4—Cash paid, wages for week, .				22	10	0
"	"	5—Cash received from R. Whyte for 6						
		pigs,				13	10	0
"	"	6—Cash from John Brown for 80 qrs.						
		oats sold him,				64	0	0

* Note.—This part of the question may be done if there is time.

1886.	January	6—Cash paid into bank, . . .	£150	0	0
"	"	7—Sold and sent to J. Herdman 31 qrs. wheat at 35s. (Payment to be made on 7th February.)			
"	"	8—Cash drawn from bank, . . .	50	0	0
"	"	8—Bought horse from George Milne for (Cheque to be sent on 22nd.)	25	0	0
"	"	9—Cash paid for 25 pigs bought at Edinburgh Market at 15s., . . .	18	15	0
"	"	9—Cash paid for lime, . . .	10	18	0

(One and a half hour allowed.)

VETERINARY DEPARTMENT.

The Society established a Veterinary Department in 1823, but by an arrangement made with the Royal College of Veterinary Surgeons, the Society's examinations ceased in 1881. Holders of the Society's Veterinary Certificate are entitled to become Members of the Royal College of Veterinary Surgeons on payment of certain fees, without being required to undergo any further examination. The number of Students who have passed for the Society's Certificate is 1183.

In 1874 the Society resolved to vote annually eight silver medals for Class Competition to each of the two Veterinary Colleges in Edinburgh, and to the one in Glasgow.

FORESTRY DEPARTMENT.

The Society grants FIRST and SECOND CLASS CERTIFICATES in FORESTRY.

BOARD OF EXAMINERS.

1. *Science of Forestry and Practical Management of Woods.*—Dr CLEGHORN of Stravithy, St Andrews; JOHN MACGREGOR, Ladywell, Dunkeld; WILLIAM M'CORQUODALE, Scone Palace, Perth; J. GRANT THOMSON, Grantown, Strathspey.
2. *Elements of Botany.*—Dr CLEGHORN.
3. *Nature and Properties of Soils, Drainage, and Effects of Climate.*—Dr A. P. AITKEN, Edinburgh, and Dr W. CRAIG.
4. *Land and Timber Measuring and Surveying; Mechanics and Construction, as applied to Fencing, Drainage, Bridging, and Road-Making; Implements of Forestry.*—A. W. BELFRAGE, C.E., Edinburgh.
5. *Book-keeping and Accounts.*—WM. HOME COOK, C.A., Edinburgh.

Candidates must possess—1st, A thorough acquaintance with the details of practical forestry. 2nd, A general knowledge of the following branches of study, so far as these apply to forestry:—The Outlines of Botany; the Nature and Properties of Soils, Drainage, and Effects of Climate; Land and Timber Measuring and Surveying; Mechanics and Construction, as applied to fencing, draining, bridging, and road-making; Implements of Forestry; Book-keeping and Accounts. The examinations are open to candidates of any age.

The following have passed for First Class Certificate :—

GEORGE YOUNG WALL, M.R.A.C., Durham,	1870
WILLIAM BAILLIE, Forester, Whithinghame, East Lothian,	1871
WILLIAM ROBERTSON, Forester's House, Lauder,	1871
PETER LONEY, Marchmont, Duns,	1873
JOHN M. AITKEN, Ravenshill, Lockerbie,	1880
RICHARD HENDERSON, The Grange, Kirkcudbright,	1880
A. H. GIBSON, Kirkcaldy,	1882
ALEX. INGLIS, Cloverport, Kentucky, U.S.A.,	1882
PETER REID, Port Ellen, Islay,	1884
JOHN WILSON, St Andrews,	1884
CECIL HENRY HOOPER, Elmleigh, Beckenham, Kent,	1886
WILLIAM SOMERVILLE, Cormiston, Biggar,	1886

For Second Class Certificate :—

JOHN M'EWEN, Yellow Cottage, Killin,	1880
THOMAS BERWICK, 56 North Street, St Andrews,	1885
DONALD C. CAMERON GRANT, Southleigh, Murrayfield,	1886

SYLLABUS OF EXAMINATION.

I.—SCIENCE OF FORESTRY AND PRACTICAL MANAGEMENT OF WOODS.

1. Formation and ripening of Wood. Predisposing causes of decay.
 2. Restoration of Wood-lands :—(1) Natural reproduction ; (2) Artificial planting. 3. General management of plantations. Cropping by rotation. Trees recommended for different situations. 4. Season and methods of pruning, thinning, and felling. 5. Circumstances unfavourable to the growth of trees. 6. Mechanical appliances for conveying and converting timber. Construction of saw-mills. 7. Qualities and uses of chief indigenous timbers. Processes of preserving timber. 8. Management of nurseries. Seed-sowing. 9. Collection of forest produce. 10. Manufacture of tar and charcoal. 11. Insects injurious to trees—preservation of birds which prey upon them, drawing a distinction between birds which are beneficial and those which are destructive to trees.

II.—ELEMENTS OF BOTANY.

1. Nutritive Organs of Plants.—Root, stem, leaves. Functions of roots. Various kinds of stems, with examples. Use of the stem. Structure of leaves. Different kinds of leaves. Arrangement and functions of leaves.
 2. Reproductive Organs.—Flower and its parts. Arrangement of the whorls of the flower—calyx, corolla, stamens, pistil. Ovule. Mature pistil or fruit. Pruning and grafting. Seed. Young plant or embryo. Sprouting of the seed or germination. 3. General Principles of Classification.—Meaning of the terms Class, Order, Genus, Species. Illustrations taken from common forest trees and shrubs. Practical examination on fresh specimens and models ; some of the latter may be seen in the Museum at the Royal Botanic Garden, which is open daily to the public free. Candidates may consult Thome's "Text-Book of Botany," by Bennett (Longmans) ; Lindley's "School Book of Botany."

III.—NATURE AND PROPERTIES OF SOILS, DRAINAGE, AND EFFECTS OF CLIMATE.

1. The different descriptions of soils, their classification and suitability to the growth of different descriptions of timber trees. 2. The composition and constituents of soils. The relations between the soil and trees growing on it. 3. The effects of drainage on soils and on climate. 4. The mode of drainage for plantations. 5. The influence of temperature, rainfall, aspect, shelter, and prevailing winds on tree life. 6. The methods of registering and recording observations, and the instruments used.

IV.—LAND AND TIMBER MEASURING AND SURVEYING; MECHANICS AND CONSTRUCTION AS APPLIED TO FENCING, BRIDGING, AND ROAD-MAKING: IMPLEMENTS OF FORESTRY.

1. The Use of the Level and Measuring Chain. Measuring and mapping surface areas. 2. The measurement of solid bodies—as timber, stacked bark, faggots, &c., earthwork. 3. The different modes of fencing and enclosing plantations; their relative advantages, durability, cost of construction, and repairs. 4. The setting out and formation of roads for temporary or permanent use. 5. The construction of bridges over streams and gullies; of gates or other entrances. 6. The different implements and tools used in planting, pruning, felling, barking, and working up timber trees, or preparing them for sale. Ewart's "Agricultural Assistant," Blackie & Son, Glasgow and Edinburgh, price 3s. 6d. Strachan's "Agricultural Tables," Oliver & Boyd, Edinburgh, price 2s. 6d.

V.—BOOK-KEEPING AND ACCOUNTS.

1. Questions in Practice and Proportion. 2. Book-keeping—describe books to be kept; give examples. Taking of stock.

EXAMINATION PAPERS, 1886.

MARKS:—100 is the maximum in all the subjects. In Forestry, 75 to pass for First-Class Certificate, and 50 for Second-Class. In all other subjects, 40 to pass for First, and 20 for Second-Class Certificate.

SCIENCE OF FORESTRY AND PRACTICAL MANAGEMENT OF WOODS.

1. In forming a plantation of 500 to 1000 acres in Scotland, what trees should be planted with a view to profit; having regard to soil, subsoil, altitude, and exposure?

2. What insects are most injurious to British timber trees? Describe the nature of the damage done and the season when it usually occurs. State some of the remedies proposed.

3. Describe reproduction.

- a. By means of cuttings.
- b. By means of layers.
- c. By grafting and budding.

4. If the top of a tree is destroyed, how is a new one produced? Explain in words or by a sketch.

5. Can you give rules for coppice forests? What is the influence of standards on coppice? What number would you leave per acre?

(Two hours allowed.)

BOTANY.

1. Describe the origin, function, and growth of roots. In what particulars do they differ from stems? In what way does root pruning induce fertility?

2. In what form is starch commonly found in vegetable tissues? By what characters would you recognise it?

3. Enumerate the principal forms of inflorescence, giving their special names, and an example of each.

4. Describe the fruit of the larch, mulberry, oak, whin, and hornbeam.

5. Explain in what respects the nutrition of *Terrestrial Epiphytic* and *Parasitic* plants differ, and give examples of each class.

6. Give two examples (genus and species) of each of the following natural orders:—

Coniferae.	Malvaceae.
Leguminosae.	Rosaceae.
Amentiferae.	Liliaceae.

(One and a half hours allowed.)

NATURE AND PROPERTIES OF SOILS, DRAINAGE,
AND EFFECTS OF CLIMATE.

1. What are the most important ingredients in a fertile soil?

2. What effects on the health and vigour of trees are caused by the removal of dead leaves from plantations?

3. Describe two methods of draining forest land, and describe also the nature of the soils for which they are best adapted.

4. In what manner are the climatic conditions, and the agricultural value of a district, affected by the extensive denudation of forests? Mention any observations you have made on that subject.

5. What information is afforded by observations made with the wet and dry bulb thermometers?

(One and a half hours allowed.)

LAND AND TIMBER MEASURING AND SURVEYING;
MECHANICS AND CONSTRUCTION AS APPLIED TO FENCING,
DRAINAGE, BRIDGING, AND ROAD-MAKING; IMPLEMENTS OF
FORESTRY.

1. What is required so as to be certain of the correct adjustment of a spirit-level for accurate sights?
2. Make form of level-book on separate paper, with four sights marked with imaginary lengths and remarks.
3. Make sketch section of same to imaginary scale, marking on total heights from datum with the imaginary lengths from starting point.
4. Describe the different kinds of fences, and where suitable, keeping expense in view.
5. Describe tools used for forestry purposes.
6. Draw sketch of best construction for wooden gate.
7. Draw sketch of wooden bridge of 30 feet span over ravine above burn.
8. Describe method of road-making of permanent character of 30 feet width.

(Two hours allowed.)

BOOK-KEEPING AND ACCOUNTS.

1. Reduce $\frac{1}{2}$ of $\frac{2}{3}$ of $\frac{1}{4}$ of $\frac{1}{2}$ of 33 to a simple fraction.
2. Multiply 84.728 by .316, and divide .0863547 by .000713, and carry out the latter to three points of decimals.
3. How many tiles (15 inches) will be required to drain 1 acre, each drain being 30 feet apart?
(The side of an acre is, say 210 feet.)
4. What is the cost of wire netting at 3d. per square yard, sufficient for a fence $3\frac{1}{2}$ miles long and 3 feet high?
5. How many bricks would be required to build a wall 20 yards long, $7\frac{1}{2}$ feet high, and $1\frac{1}{2}$ inches deep, supposing a brick to be 9 inches by $3\frac{1}{2}$ inches by $2\frac{1}{2}$ inches?
6. If a piece of wood 10 feet long, 18 inches broad, and 3 inches thick, cost 12s., what will another piece cost which is 25 feet long, 16 inches broad, and 4 inches thick?
7. Describe briefly the books a forester ought to keep, and their nature and use.

(One and a half hours allowed.)

CHEMICAL DEPARTMENT.

Chemist to the Society.—Dr A. P. AITKEN, Chemical Laboratory,
8 Clyde Street, Edinburgh.

The object of the Chemical Department is to carry on the Experiments at the Society's Agricultural Stations, and to consider all matters coming before the Society's notice in connection with the chemistry of agriculture.

The practical chemical work of the Society is under the charge of its Chemist, whose duties are—

1. To superintend the experiments being carried on at the experimental stations of the Society, to make all necessary analyses and investigations in connection therewith, and to prepare an annual report of these for publication in the *Transactions*.
2. To perform the requisite analyses in connection with such other experiments as are conducted under the sanction and direction of the Chemical Committee, and report on the same if desired.
3. To prepare a summary of all analyses for which the Society has contributed payment, and full details of such as appear to the Chemical Committee worthy of notice for publication in the *Transactions*.
4. To attend all meetings of the Chemical Committee of the Society.
5. To have a laboratory in Edinburgh, where he may be consulted by members of the Society.
6. To maintain a sufficient staff of assistants, one of whom at least is specially engaged in, and acquainted with, both the chemical and experimental work of the Society.
7. To prepare for publication in the Society's *Transactions* reports on the more important investigations and experiments being conducted in this country and elsewhere on the application of chemistry to agriculture.
8. To deliver lectures at such places and on such subjects connected with the chemistry of agriculture as are approved of by the Chemical Committee, and for which the chemist is permitted to receive remuneration from those applying for his services.

In order to encourage members, being practical farmers, to make experiments with different manures in the field, the Society undertake to defray the cost of making necessary analyses of soils, manures, and products for such experimenters, provided they conduct their experiments under the direction or with the sanction of the Chemical Committee of the Society.

The chemist and his assistants are paid their travelling expenses when on the Society's work.

He receives a fee of £1, 1s. for each analysis made by him when employed as referee in connection with Local Associations.

He is entitled to charge for analyses made for members of the Society according to the following scale of fees:—

*Manures,	£1 0 0
*Feeding Stuffs,	1 0 0
One constituent of Manure or Feeding Stuff,	0 10 0
Water Analysis, to test fitness for domestic use,	1 0 0
Soil, Analytical Examination to discover chief deficiencies,	1 10 0
Vegetable Products, such as Hay, Turnips, Grain, &c.,	1 0 0

* All analyses of manures and feeding stuffs are done in duplicate at these charges.

INSTRUCTIONS FOR SELECTING SAMPLES FOR ANALYSIS.

MANURES.

Four or more bags are to be selected for sampling. Each bag is to be emptied out separately on a clean floor, worked through with the spade, and one spadeful taken out and set aside. The four or more spadefuls thus set aside are to be mixed together until a uniform mixture is obtained. Of this mixture one spadeful is to be taken, spread on paper, and still more thoroughly mixed, any lumps which it may contain being broken down with the hand. Of this mixture two samples of about half a pound each shall be taken by the purchaser or his agent, in the presence of the seller or his agent or two witnesses (due notice having been given to the seller of the time and place of sampling), and these samples shall be taken as quickly as possible and put into bottles or tin cases to prevent loss of moisture, and having been labelled, shall be sealed by the samplers—one or more samples to be retained by the association, and one to be sent to the chemist for analysis.

FEEDING STUFFS.

Samples of feeding compounds are to be taken in a similar manner.

Samples of cake are to be taken by selecting three cakes, breaking each across the middle, and from the broken part breaking off a small piece. The three pieces thus obtained shall be wrapped up and sealed by the samplers, and sent for analysis as in the case of manures, and three duplicate pieces similarly sealed and labelled shall be retained by the association.

SOILS.

Dig a little trench about two feet deep, exposing the soil and subsoil. Cut from the side of this trench perpendicular sections of the soil down to the top of the subsoil. Collect them carefully, and do not allow the subsoil to mix with them. Similar sections of subsoil immediately below these samples should be taken and preserved separately. Five or six similarly drawn samples should be taken from different parts of the field, and kept separate while being sent to the chemist, that he may examine them individually before mixing in the laboratory.

VEGETABLE PRODUCTS.

Turnips, &c., 20 to 30 carefully selected as fair average bulbs.

Hay, straw, ensilage, &c., must be sampled from a thin section cut across the whole stack or silo, and carefully mixed about; about 10 lbs. weight is required for analysis.

Grain should be sampled like manures.

WATERS.

Samples of water for analysis should not be put into ordinary wine bottles or stoneware jars stopped with corks, as these usually vitiate the samples. Clear glass Winchester quarts with glass stoppers should be used.

Cases containing these, chemically cleaned, are forwarded from the laboratory on application.

Well water should be allowed to run for some time before the sample is drawn.

Standing water from cisterns, tanks, ponds, &c., should be sampled by immersing the bottle entirely under the water, and holding it, neck upwards, at least four inches below the surface.

Spring or stream water should be sampled in dry weather, by immersion, if possible, but if not deep enough for that purpose, a perfectly clean cup or glass should be used for transferring the water to the bottle.

While the bottle is being filled the stopper should either be held in the hand by the top or laid on a clean piece of paper.

Samples should be despatched to the laboratory *immediately* after being taken.

LOCAL ANALYTICAL ASSOCIATIONS.

I. With the view of encouraging, as well as regulating the conduct of, Local Analytical Associations, the Society contributes from its funds towards their expenses a sum not exceeding £250 annually.

II. The amount of such contribution is to each association at the rate of 10s. for each full analysis, and 5s. for each partial analysis* of manure or feeding stuff affected, or such proportion thereof as the above annual contribution may permit of. The pecuniary assistance thus offered is subject to the following conditions being complied with to the satisfaction of the Chemical Committee:—

1. That the rules of the association are submitted to and approved of by the Chemical Committee.

2. That it is a condition of participating in the grant that the association make analyses for members of the Highland and Agricultural Society, being farmers and not members of the local association, charging them the cost price to the association, less the amount recovered from the Society.

3. That the association is managed by a committee of practical farmers owning or occupying land in the district.

4. That the analyst employed is of acknowledged standing.

5. That the benefits of the grant apply only to analyses made for farmers, and that these subscribe towards the expenses of the association, subject to the exception in No. 2.

6. That each analysis represents at least one ton of bulk actually purchased and delivered to one or more members under guarantee, or at a specified price per unit of valuable ingredients.

7. That the analysis has been made from a sample drawn after delivery, in accordance with the published instructions of the Society, and that a sealed duplicate sample has been retained.

8. That all analyses are reported according to forms furnished by the Highland and Agricultural Society, and that valuations of manures, if any are made, are calculated on a uniform standard to be issued periodically by the Society, and at least once a year.

III. (a) A general report regarding the analyses for which the Society has contributed payment is submitted to the general meeting in January, and full details concerning manures and feeding stuffs whose analyses show any of the valuable constituents to be deficient to the extent of one-tenth of the amount guaranteed, or whose total deficiencies represent as much as one-tenth of the value of the manure or feeding stuff, are published annually in the *Transactions*.

(b) In the case of every analysis showing the deficiency above described,

* A partial analysis is one in which only one important constituent has been determined by the chemist or guaranteed by the seller.

the secretary of the association must obtain confirmation of the deficiency from the chemist. The deficiency having been confirmed, the duplicate sample must be forwarded to the Secretary of the Highland and Agricultural Society. A copy of the analysis must at once be sent to the seller, and any explanations received from him forwarded in due course to the Secretary of the Highland and Agricultural Society.

(c) Should the seller be dissatisfied with the results obtained by the analyst of the association, a further analysis may, at his option, be made from the duplicate sample by another analyst to be chosen by the Society, and at its cost, if the further analysis exonerates the seller; if otherwise, at the seller's cost.

IV. The report of each analysis for which a grant is claimed must be sent to the Secretary of the Highland and Agricultural Society on or before the 1st November of each year, written on a schedule issued by the Society, and accompanied by a form of guarantee (also issued by the Society), which must be filled up and signed by the seller.

The schedules and guarantee forms are supplied by the Secretary of the Society on application, and no grant is given for any analysis whose schedule and guarantee form are not accurately filled up.

No grants will be given for analysis whose schedules are sent in later than 1st November.

The actual analytical reports of the association's analyst need not accompany the schedules, but must be forwarded if desired.

METHOD OF PROCEDURE TO BE FOLLOWED BY SECRETARIES AND MEMBERS OF ANALYTICAL ASSOCIATIONS APPLYING FOR GRANTS FROM THE HIGHLAND AND AGRICULTURAL SOCIETY.

1. When a Member makes a purchase he must obtain from the seller an analytical guarantee, written and signed by the seller, upon a form supplied by the Society.

2. When the Member receives delivery of the stuff bought he must inform the seller of the time and place at which the samples are to be taken for analysis, so that he may have an opportunity of being present.

3. In sampling a manure or feeding stuff the Society's printed instructions for sampling must be strictly complied with.

4. The sample (if it is to be analysed) must be sent to the chemist within a week of the date of sampling, so that any deficiency may be immediately detected.

5. The chemist must be asked to send in his report of analysis within a fortnight after receiving the sample.

6. When an analysis shows the sample to be deficient to such an extent as to require investigation by the Society, the Association's chemist must be asked to verify the accuracy of his analysis, and report the matter within a week.

7. When a deficiency has been confirmed the Secretary of the Association must immediately inform the seller thereof, and draw his attention to the provisions of Regulation III.

8. At the same time the duplicate sample must be sent to the Secretary of the Highland and Agricultural Society, and along with it must be sent the schedule relating to the purchase, and also the guarantee form, both accurately filled up in every particular.

9. Any correspondence that may ensue with the seller or buyer must be forwarded to the Secretary of the Highland Society as soon as received, so

that the Committee may be able to investigate the matter with full knowledge of all the details.

10. The schedules (accurately filled up) of all samples for which the Association claims a grant, along with the signed guarantees appertaining to them, must be sent to the Secretary of the Highland and Agricultural Society on or before 1st November, or they will not be received.

MANURES—THEIR COMPOSITION AND CHARACTERISTICS.

Nitrate of Soda.—A most valuable nitrogenous manure. Perfectly soluble, and immediately available for the nourishment of the plant. Feebly retained by the soil. Rapidly goes down to the subsoil. When much nitrate of soda is applied to land, unaccompanied by other manures, it causes the soil to be rapidly exhausted. Benefits deeply-rooting plants.

Good samples contain 95 per cent. or upwards of pure nitrate of soda, equivalent to about 19 per cent. of ammonia.

Five parts of nitrate of soda equal 1 of ammonia.

Sulphate of Ammonia.—A more concentrated nitrogenous manure than the preceding. Perfectly soluble, but not so rapid in its action as nitrate of soda. It is somewhat firmly retained by the soil, and not so liable as nitrate of soda to be washed out by heavy rains. It is therefore more suitable than nitrate for wet districts; not so suitable for dry seasons.

Good samples contain 95 per cent. or more of pure sulphate of ammonia, equivalent to from about 24½ to 25 per cent. of ammonia.

About four parts of sulphate of ammonia equal 1 of ammonia.

N.B.—Both nitrate of soda and sulphate of ammonia increase leaf and stem more than grain, and when applied to grass they check the growth of clover.

Dried Blood.—A nitrogenous manure, which differs from the above in being insoluble. It must be decomposed in the soil before it yields up its nitrogen to the plant, and this it does only slowly. The nitrogen is in the form of albumen, and is capable of yielding from 12 to 16 per cent. of ammonia.

Horn Dust.—An insoluble nitrogenous manure, capable of yielding 16 to 18 per cent. of ammonia. When in the form of fine sawdust, it decomposes easily, and is a good nitrogenous manure even for cereals.

Horn, when in the form of chips or coarse shavings, decomposes extremely slowly, and is not suitable for manure.

Shoddy or Wool Waste.—An insoluble nitrogenous material used by manure manufacturers as a source of ammonia in dissolved manures. It is capable of yielding from 5 to 10 per cent. of ammonia, but is unsuitable for direct application as a manure.

Leather.—A very insoluble nitrogenous material, yielding about 9 per cent. of ammonia, used by manure manufacturers after being melted and ground, but possessing no interest for the farmer.

Peruvian Guano.—A general manure formed of the excrements of fish-eating birds, and containing nitrogenous compounds, phosphates, and potash.

High-class Peruvian guano is rich in nitrogenous matter, a large proportion of which is soluble. As recently imported, it was capable of yielding from 8 to 12 per cent. ammonia, part of which was derived from ammonia salts, and part (less than 1 per cent.) from nitrates. Phosphates were low, seldom exceeding 30 per cent., but from one-quarter to one-half of the phosphates were soluble. The amount of potash was usually from 3 to 5 per cent.

Low-class Peruvian guano, as now imported, is poor in nitrogenous matter, yielding only from 3 to 5 per cent. ammonia. The phosphates are correspondingly high, viz., from 30 to 50 per cent., but the proportion of soluble phosphate is much smaller than in high-class Peruvian guano. Potash occurs to a very small extent, viz., about 1 to 3 per cent.

Low-class guanos are formed from high-class guanos, by the washing out of soluble constituents by rain, &c., and their composition varies greatly according to the amount of washing they have undergone.

Genuine Peruvian guano frequently contains a large proportion of stony insoluble matter.

Ichaboe Guano.—A general manure, but of recent formation. It is very rich in nitrogenous matter, which yields from 10 to 16 per cent. of ammonia, but a large part of the nitrogenous matter is in the form of feathers, which are insoluble and of low manurial value.

The total phosphates vary from 18 to 30 per cent., of which from a fourth to a half is usually soluble. There is seldom more than 2 per cent. potash present.

Fish Guano.—Derived from fish-curing yards, and consisting of the heads and offal of fish, dried and ground. Properly speaking, it is not a guano. The name guano is properly applied only to the dung of birds.

High-class fish guano contains nitrogenous matter, yielding from 10 to 12 per cent. of ammonia, but it is in the form of insoluble albuminous compounds, which only very slowly decompose and become available as plant food. The phosphates range from 18 to 30 per cent., and are all insoluble.

Low-class fish guanos are substances like the preceding, but containing less nitrogenous matter and more phosphates. They are simply bone manures, with somewhat more ammonia and less phosphate than ordinary bone meal, and having no real resemblance to a guano.

Fish guanos are usually impregnated with fish oil, which detracts from the value of the manure. The oil varies from 3 to 10 per cent.

Frey-Bentos Guano.—The dried and ground residue and débris of animals after the extraction of "Liebig's Extract." It is not a guano. It contains nitrogenous matter and phosphates, both of which are insoluble and slow in their action as manures. It varies in composition, yielding from 6 to 12 per cent. ammonia, from 16 to 35 per cent. phosphates, and a small proportion of potash.

Bone Meal.—Chiefly a phosphatic manure, but containing also nitrogenous matter. Phosphates range from 41 to 55 per cent. according to the purity of the bones, and are insoluble. The nitrogenous matter is capable of yielding from 4 to 5 per cent. ammonia, and is also insoluble. The higher the phosphates the lower the ammonia, and *vice versa*. There is usually 3 per cent. or more of oil in bones, and this may retard its action as a manure. The finer ground it is the more speedy is its action.

Bone Dust.—A coarser ground bone than the preceding.

Crushed Bones.—Still coarser ground.

Steamed Bone Flour.—Bones which have been subjected to steam at high pressure for the extraction of glue or gelatine. The residue contains from 56 to 65 per cent. phosphates and from 1 to 2 per cent. ammonia. It is white coloured and friable, and can be crushed with the hand. It is able to be, and ought to be, ground to a fine flour. Owing to this latter character, it is the most active form of bone manure.

Pure Dissolved Bones.—Bones dissolved in sulphuric acid and dried with bone ash or bone char, or other bone material. It contains usually less than 20 per cent. soluble phosphate, about 10 per cent. or upwards of insoluble phosphate, and yields from $2\frac{1}{2}$ to $3\frac{1}{2}$ per cent. ammonia.

Dissolved Bones.—A conventional name applied to compound manures

consisting of any kind of mixture of phosphatic and nitrogenous materials which can be dissolved, with (or without) an admixture of bone, so as to produce a manure containing from 15 to 30 per cent. soluble phosphates, and from 1 to 3 per cent. ammonia.

Pure Vitriolated Bones.—Bones which have been moistened with sulphuric acid, and thereafter allowed to heat in large heaps for a long time. Good samples contain from 6 to 12 per cent. soluble phosphate, with from 30 to 40 per cent. insoluble phosphate, and yield from 3 to 4 per cent. ammonia. They should consist of nothing but bones and sulphuric acid.

Superphosphates.—Phosphates dissolved with sulphuric acid. Their composition varies according to the richness of the phosphate from which they are made, and the extent to which they have been dissolved.

High-class Superphosphates are made from phosphates containing a high percentage of phosphate of lime, and are very thoroughly dissolved. They should contain between 30 and 40 per cent. soluble phosphate, and very little insoluble phosphate.

Medium Superphosphates contain at least 26 per cent. soluble phosphate, and all below that are

Low-class Superphosphates made from minerals poor in phosphate of lime, or insufficiently dissolved.

Mineral Phosphates exist in great variety, and contain very various proportions of phosphate of lime, viz., from 20 to 90 per cent. They are of use as manures only when they are ground to the finest flour.

Basic Cinder.—A substance obtained as a waste product in the dephosphorising of steel. It contains about 40 per cent. phosphate of lime, and is manufactured into a powder of extreme fineness. It is a good manure, and very cheap.

Compound Manures.—These are general manures containing nitrogenous matter, phosphates, and potash, and their value depends not only on the amounts of these constituents, but also on their fineness of division, their solubility, and the sources from which their ingredients are derived.

The general character of a few of the more common of these may be indicated thus:—

Turnip Compounds.—These usually contain from 25 to 35 per cent. phosphates, of which the half or more is soluble, and nitrogenous matter, capable of yielding from 2 to 4 per cent. of ammonia, and sometimes 1 or 2 per cent. of potash.

Potato Compounds.—These are somewhat like the preceding, but contain usually less phosphate and a little more ammonia, from 3 to 6 per cent.; sometimes they contain no potash, but more frequently about 3 or 4 per cent. is present, and in some instances twice as much.

Bean Compounds.—These may contain from 10 to 20 per cent. phosphates, nitrogenous matter yielding from 2 to 4 per cent. of ammonia, and usually a considerable proportion of potash, often as much as from 10 to 20 per cent.

Cereal Compounds.—These usually contain about 20 per cent. phosphates, mostly soluble, and nitrogenous matter, yielding from 3 to 6 per cent. ammonia, and seldom contain potash.

Grass Compounds.—These are somewhat like the preceding, but may contain less phosphates and more nitrogen, part of which may be in the form of nitrate.

RELATIVE ACTIVITY OF MANURES.

Nitrogen.—Most active in—1st, Nitrates; 2nd, Ammonia salts; 3rd, High-class Peruvian and Ichaboe guanos; 4th, High-class dissolved compounds; 5th, Dried blood; 6th, Steamed bone flour; 7th, Fish guano and fine bone meal; 8th, Rape cake and cotton cake dust; 9th, Bone dust and crushed bones.

Phosphates.—Most active in—1st, Superphosphates and dissolved phosphates derived from any source; 2nd, Precipitated and reverted phosphates; 3rd, Steamed bone flour; 4th, Bone ash; 5th, Charleston and similar phosphates ground to the finest flour; 6th, Bone meal and fish guano; 7th, Bone dust and crushed bones.

HINTS ON THE APPLICATION OF MANURES.

NITROGENOUS MANURES.

- Nitrate of Soda*.—Apply as a top-dressing to the braird. Showery weather advantageous. Heavy rains cause loss. Two half doses with fortnight interval better than one whole dose. Increases straw more than grain. Increases grass, diminishes clover.
- Sulphate of Ammonia*.—Apply as top-dressing at the time of sowing, not after brairding. Increases grass, diminishes clover. More suitable than nitrate for wet districts. Unsuitable for dry seasons.
- High Class Guanos*.—Apply with the seed, or partly as top-dressing. Useful for young grass and early potatoes.
- Low Class Guanos*.—Strong general manures. Apply with the seed.
- Dissolved Compounds*.—Apply with the seed.
- Dried Blood*.—Apply a month or more before sowing, if possible. If applied with the seed, useful for root-crops only.
- Fish Guano*.—Best on warm, open land, and in moist climates. Apply as early as possible. Should not contain more than 3 per cent. oil.
- Leather and Shoddy*.—Of no value unless they are dissolved.

PHOSPHATIC MANURES.

- Superphosphate*.—Best phosphate for clayey soils. Suits medium soils. Makes early crop, therefore good for late districts. Increases grain more than straw.
- Precipitated Phosphate*.—Best on medium and light land.
- Steamed Bone Flour*.—Should be finely ground and applied early. Best on light soils or on moorland. Suits wet climates. Excellent improver of pastures. Quicker than bone meal in its action.
- Bone Ash*.—Generally applicable. Best on light land.
- Bone Meal*.—Should be as fine as possible, and applied early. Best on light, free soils, and on sandy soils.
- Mineral Phosphate*.—Must be ground to the finest flour, and feel soft and floury. Best on moorland and land rich in organic matter. Should be applied very early.
- Bone Dust and Crushed Bones*.—More suitable for vine borders than for agricultural purposes.

PHOSPHATIC MANURES.—When applied alone, frequently fail to give a full crop. Some nitrogenous manure ought as a rule to be mixed with them, or applied later as a top-dressing.

POTASSIC MANURES.—Useful where potatoes or beans are grown, or where straw is sold. Increases clover. Seldom required where much dung is used. Sometimes injurious if applied with the seed. Should be applied very early.

LIME.—Better slaked in large heap, and then carted on and spread, than slaked in small heaps on land. Better two small limings than one big one. Best results on clayey land and moorland. As a preventive of finger-and-toe, lime is better applied to the lea before the oat crop than to the stubble. It is of little use for that purpose when applied to the fallow immediately before turnip sowing.

NOTES REGARDING ANALYSES.

I. MANURES.

The three ingredients of greatest importance in manures are phosphoric acid, nitrogen, and potash.

1. PHOSPHORIC ACID is present in manures as such, and also as phosphates of lime, magnesia, iron, and alumina.

Phosphate of Lime is most important, and exists in two states, insoluble and soluble.

Insoluble—

Insoluble phosphate of lime, called also	} contains about 46% phosphoric acid.
Tricalcic phosphate, and	
Tribasic phosphate of lime,	

Soluble—

Soluble phosphate of lime, called also	} contains about 61% phosphoric acid.
Acid phosphate of lime, and <i>erroneously</i>	
Monobasic phosphate of lime,	
Some analysts prefer to state the soluble phosphate as	
Biphosphate of lime, called also	} contains about 72% phosphoric acid.
Monobasic phosphate,	

The soluble phosphates are usually stated as equivalent to so much tricalcic or insoluble phosphate.

Soluble phosphate, multiplied by $1\frac{1}{2}$	} gives the equivalent of tricalcic phosphate nearly.
Biphosphate, " " $1\frac{1}{2}$	

Much confusion has arisen from the various methods of stating soluble phosphate. To escape from this confusion, it has now become the custom to consider the term "soluble phosphate" to mean "phosphate of lime rendered soluble." IN OTHER WORDS, SOLUBLE PHOSPHATE MEANS THE INSOLUBLE PHOSPHATE FROM WHICH IT WAS DERIVED.

Phosphate of magnesia occurs in small quantity in bones, &c., and is usually reckoned as tricalcic phosphate.

Phosphates of iron and alumina, when occurring in *small quantity*, are usually reckoned as tricalcic phosphate, but if the quantity is considerable it should be separately estimated.

2. NITROGEN occurs in manures mostly in three forms—Ammonia salts, nitrates, and albuminoid matter.

Ammonia sulphate (pure), contains 25 $\frac{1}{2}$ % ammonia.

Ammonium chloride (pure), " 31 $\frac{1}{4}$ % "

Nitrate of soda (pure), contains nitrogen equal to 20% ammonia.

Albuminoid matter contains about 16% nitrogen, equal to about 19% ammonia, most of which sooner or later becomes available as plant food.

3. POTASH is found in small amount in most manures, and should be reckoned as anhydrous potash (K_2O).

Sulphate of potash (pure), contains potassium = 54% anhydrous potash.

Muriate of potash (pure), contains potassium = fully 63% anhydrous potash.

II. FEEDING STUFFS.

These are chiefly concentrated forms of food, whose value depends on the amounts they contain of albuminoids, oil, and carbohydrates.

Albuminoids are compounds containing nitrogen, and more or less resemble dry flesh in their composition. They are sometimes called *flesh-formers*. They are the most valuable constituents of feeding

stuffs. The percentage of nitrogen contained in a cake multiplied by $6\frac{1}{2}$ gives the percentage of albuminoids.

Oils occur chiefly in seeds, and are of various kinds. Some are highly nutritious.

Carbohydrates are compounds, such as sugar, starch, gum, and cellulose.

These are sometimes called *heat-producers*.

Woody fibre is the name given to that part of the cellulose which is insoluble when boiled in weak solutions ($1\frac{1}{2}\%$) of acids and alkalis, and is therefore considered indigestible.

Good linseed, cotton, and rape cakes should contain from 4% to 5% nitrogen, about 10% oil, and about 6% ash.

USEFUL FACTORS.

Amount of	Multiplied by	Gives corresponding amount of
Nitrogen,	1.214	Ammonia.
"	6.3	Albuminoid matter.
Ammonia,	3.882	Sulphate of Ammonia.
"	3.147	Muriate of Ammonia.
"	3.706	Nitric Acid.
"	5.0	Nitrate of Soda.
Potash (anhydrous),	1.85	Sulphate of Potash.
"	1.585	Muriate of Potash.
Phosphoric acid (anhydrous),	2.183	*Phosphate of Lime.
" "	1.4	Biphosphate.
" "	1.648	Soluble Phosphate (monocalcic tribasic).
Soluble Phosphate,†	1.325	Phosphate of Lime.
Biphosphate,	1.566	Phosphate of Lime.
Lime,	1.845	Phosphate of Lime.
"	1.786	Carbonate of Lime.

The following are the forms in which analyses of *ordinary genuine* manures and feeding stuffs must be reported :—

I. REPORTS OF ANALYSES OF MANURES.

(On the one side are the analytical details, and on the other the valuable constituents, which alone are considered in estimating the value of manure.)

1. Form of Analysis for SUPERPHOSPHATES, DISSOLVED BONES, and the like.

	Capable of yielding as valuable constituents.
Phosphoric Acid, soluble.....	Phosphates of Lime dissolved, . . . }
Do., in an insoluble state.....	
Lime,	Do. undissolved, . . . }
Sulphuric Acid, Or- }	
ganic matter, &c., }	
Sand and insoluble matter.....	Ammonia,

* By phosphate of lime is meant tricalcic phosphate (3CaO , P_2O_5).

† Monocalcic tribasic phosphate (CaO , $2\text{H}_2\text{O}$, P_2O_5).

2. Form of Analysis for BONES, BONE MEAL, FISH GUANO, and the like.

Phosphoric Acid,	Capable of yielding as valuable constituents.
Lime,	Phosphate of Lime,
Alkalies, &c.,	
Organic matter,	Ammonia,
Moisture,	
Sand and insoluble matter.....	

3. Form of Analysis for MIXED MANURES, PERUVIAN and ICHABOE GUANOS, and the like.

Phosphoric Acid, soluble.....	Capable of yielding as valuable constituents.
Do., in an insoluble state.....	Phosphate of Lime dissolved,
Lime,	Do. undissolved,
Alkalies, &c.,	Potash,
Organic and Volatile matter,	Total Nitrogen, = Ammonia,
Moisture,	
Sand and insoluble matter.....	

II. REPORTS OF ANALYSES OF FEEDING STUFFS.

Valuable Constituents,	{ Albuminoid compounds, = Nitrogen
	{ Oil,
	{ Carbohydrates,
	{ Woody Fibre,
	{ Moisture,
	{ Ash,

FORMS OF GUARANTEE.

GUARANTEE OF MANURE.

I guarantee that the Manure called.....and sold by me to
.....contains a minimum of—

Soluble Phosphoric Acid	= Phosphate of Lime (dissolved)	.....	per cent.
Insoluble Phosphoric Acid	= Phosphate of Lime (undissolved)	.....	per cent.
Potash Salts	= Potash (K_2O)	.....	per cent.
Total Nitrogen	= Ammonia	.....	per cent.

Signature of Seller.....

Date18...

GUARANTEE OF FEEDING STUFF.

I guarantee that the Feeding Stuff called.....and sold by me to
.....contains a minimum of—

.....	per cent. Albuminoids.
.....	per cent. Oil.
.....	per cent. Carbohydrates.

Signature of Seller.....

Date18...

UNITS TO BE USED IN DETERMINING THE COMMERCIAL VALUE OF MANURES.

Terms—CASU within THREE MONTHS, including Bags—not including Cartage.

N.B.—These units are based on the present MARKET PRICES, at such ports as LEITH or GLASGOW. When these units are multiplied by the percentages guaranteed or found in any manure, they will produce a value representing the price at which one SINGLE TON may be bought.

For Season 1887.

Items to be Valued.	Peruvian Guano (Ruddied).		Frey-Bentos and Fish Guano.		Bones.		Steamed Bone Flour.	Pure Vitriolated Bones.	Superphosphates.		Dissolved Compounds
	Genuine.	Fortified.			a.	b.	c.		a.	b.	
Phosphates dissolved, . . .	1/10	1/8	2/-		1/10	1/8	1/7	3/-	2/2	2/-	2/6
undissolved, . . .	14/-	13/-	10/-		9/-	9/-	9/-	2/-	...	...	1/6
Ammonia, . . .	8/-	9/-	...		...	...	...	9/-	...	...	9/-
Potash, . . .								...	...	...	3/6

AVERAGE MARKET PRICES (for last three months).

Items to be Valued.	Per cent.		Per ton.		Per unit.	Muriate of Potash, Sulphate of Potash, Kamit, Ground Mineral Phosphates, .			Per cent.	Per ton.		For unit.
	97	95	£11 7 6	9 0 0	Ammonia= 9/6	Muriate of Potash, .	Sulphate of Potash, .	Kamit, .		£8 0 0	4 7 6	Potash = 3/9
Sulphate of Ammonia, . . .	15	12	9 0 0	9 0 0	11/3	Ground Mineral Phosphates, .	12	Potash	...	1 13 0	...	5/9
Nitrate of Soda, . . .	7		...	...	5/-							5/-
Dried Blood, . . .												Phosphate, 6d. to 1/4
Shoddy and Ground Leather, . . .												
"												

1 lb. Ammonia equals 3 lbs. 14 oz. Sulphate of Ammonia or 5 lbs. Nitrate of Soda.
1 lb. Potash " 1 lb. 13 1/2 oz. Sulphate of Potash or 1 lb. 9 1/2 oz. Muriate of Potash.

No other units than these must be used in valuing manures for Local Analytical Associations receiving grants from the Society.

The COMMERCIAL Value of Manures are determined by means of the Units in the following manner:—

Take the Analysis of the Manure, and look for the following substances:—

Phosphates dissolved (or soluble phosphate),
Phosphates undissolved (or insoluble phosphate),
Ammonia,
Potash,

No other items but these are to be valued.
Should the Analysis or the Guarantee not be expressed in that way, the Chemist or the Seller should be asked to state the quantities in these terms.
The Guarantee Forms supplied by the Society must be used by Analytical Associations.

CLASSIFICATION OF MANURES.

Peruvian Guano,	{ (a) 5 per cent. Ammonia or upwards. (b) Below 5 per cent. Ammonia. "Fertilised," "standardised," or "prepared" Guano, is Peruvian Guano to which Sulphate of Ammonia has been added, and sometimes Phosphates and other ingredients.
Frey-Bentos and Fish Guano,	{ Frey-Bentos, also called "Liebig's Meat Guano" and "Meat Meal," varies much in composition. Fish Guano usually contains about 80 per cent. less or more of Phosphate, and from 7 to 10 per cent. of Ammonia.
Bones,	{ (a) 90 per cent. passing $\frac{1}{8}$ inch sieve. (b) 90 per cent. passing $\frac{1}{4}$ inch sieve. (c) Coarser. Genuine Bone Meal contains from 45 per cent. to 55 per cent. Phosphates, and from 4 per cent. to 5 per cent. Ammonia. If Phosphates are high Ammonia is low, and vice versa.
Steamed Bone Flour,	{ Bones degelatinised and ground to flour containing about 60 per cent. Phosphates, and about 2 per cent. Ammonia.
Pure Vitriolated Bones,	{ Containing nothing but Natural or Steamed Bones and Sulphuric Acid.
Superphosphates,	{ (a) Containing not less than 80 per cent. Dissolved Phosphates. (b) Containing less than 80 per cent. Dissolved Phosphates.
Dissolved Compounds,	{ Including Ordinary "Dissolved Bones" and all Special Manures consisting of ingredients dissolved together. The selling prices of such Manures may range from 10 per cent. above to 15 per cent. below the average units given above. The "Average" units alone to be used in valuing manures of this kind for Associations.
Mixtures,	{ To be valued according to the unit values (as given above) of the ingredients of which they are guaranteed and also found to be composed.

Example of Valuation.—If the Manure is a Dissolved Manure, such as Dissolved Bones not guaranteed pure, or a Special Manure, such as a Turnip or Potato Manure, it will be valued according to the units under "Dissolved Manures," the average units for which are $\frac{2}{16}$, $\frac{1}{16}$, $\frac{9}{16}$, and $\frac{3}{16}$ in the Schedule. Thus, a Turnip Manure containing 20 per cent. sol. Phos., 10 per cent. insol. Phos., 4 per cent. Ammonia, and 2 per cent. Potash, would be valued thus:—

Sol. Phos., 20 times $\frac{2}{16}$, equal to	£2 10 0
Insol. Do., 10 " $\frac{1}{16}$, "	0 15 0
Ammonia, 4 " $\frac{9}{16}$, "	1 16 0
Potash, 2 " $\frac{3}{16}$, "	0 7 0
	£5 8 0 per ton.

The values obtained by use of these "average units" will be found to correspond very closely with the cash prices of the great majority of really good dissolved and special Manures, but the price may vary from 10 to 15 per cent. on either side of the value so obtained, according to the materials of which the Manure is made, the amount bought, and other circumstances. But dissolved Manures as good as the best can be made at the price of these average units.

LOCAL ANALYTICAL ASSOCIATIONS WHO HAVE RECEIVED THE SOCIETY'S GRANTS.

	County.	Name of Association.	Name and Address of Secretary.	Number of Analyses.				Grants obtained.		
				1884.	1885.	1886.		1884.	1885.	1886.
1	Aberdeen,	Alford Analytical Association,	G. M'Connach, Cairnballoch, Alford,	16	15	11	£ s. d.	8 0 0	7 0 0	£ s. d.
2	"	Buchan Farmers' Analytical Association,	Thomas Forrest, Mains of Indqu-	17	8	12	harn, Longside,	8 10 0	4 0 0	5 10 0
3	"	Turriff Analytical Association,	J. Dunn, Jackson, Rothiemorphan,	12	20	32	J. Dunn, Jackson, Rothiemorphan,	5 10 0	9 15 0	13 15 0
4	Ayr,	Grougar Farmers' Analytical Association,	R. Whyte, East Baws, Kilmarnoch,	6	4	5	R. Whyte, East Baws, Kilmarnoch,	2 15 0	1 15 0	2 5 0
5	Argyll,	Kintyre	R. Dickie, Kileonan, Campbelltown,	1	...	...	R. Dickie, Kileonan, Campbelltown,	0 10 0	...	...
6	Caithness,	Caithness Farmers' Analytical Association,	G. Brown, Watken Mains, Caithness,	32	...	...	G. Brown, Watken Mains, Caithness,	15 5 0	...	14 0 0
7	Dumfries,	Annandale Farmers' Club,	J. & J. Baird and J. Mackenzie,	85	20	26	J. & J. Baird and J. Mackenzie,	16 15 0	11 0 0	11 5 0
8	Forfar,	Arbroath Analytical Association,	D. Falconer, Carnyllie, Arbroath,	21	10	17	D. Falconer, Carnyllie, Arbroath,	9 15 0	4 15 0	6 5 0
9	"	Carso of Gowrie Farmers' Analytical Association,	A. Anderson, Berryhill, Dumfries,	13	20	14	A. Anderson, Berryhill, Dumfries,	8 15 0	8 5 0	0 0 0
10	Inverness,	Inverness Farmers' Society,	William Ross, Seafield of Ralmsmore, Inverness,	23	9	7	William Ross, Seafield of Ralmsmore, Inverness,	11 5 0	3 15 0	3 0 0
11	Kincardine,	Kincardineshire Farmers' Club,	A. B. Annandale, Stonehaven,	4	5	5	A. B. Annandale, Stonehaven,	2 0 0	2 0 0	1 15 0
12	Kirkcubright,	Kirkcubright Analytical Association,	B. Sproat, Lennox Plunton, Kirkcubright,	19	21	21	B. Sproat, Lennox Plunton, Kirkcubright,	...	0 5 0	9 5 0
13	Lanark,	Lanarkshire Analytical Association,	J. Lindsay, Eastfield, Thaneleton,	27	18	20	J. Lindsay, Eastfield, Thaneleton,	13 0 0	7 15 0	8 0 0
14	"	Avondale Farmers' Analytical Association,	John Paterson, Torfoot, Strathaven,	...	...	5	John Paterson, Torfoot, Strathaven,	...	...	2 0 0
15	Orkney,	Orkney Agricultural Society,	James Johnston, Orphir House, Orphir,	5	0	...	James Johnston, Orphir House, Orphir,	2 10 0	3 0 0	...
16	Perth,	Strathern Analytical Association,	Robert Gardiner, The Priory, Auchterarder,	28	...	...	Robert Gardiner, The Priory, Auchterarder,	12 15 0	13 5 0	4 15 0
17	Ross,	Easter Ross	John Gordon, Balmuchy, Kearn,	...	33	14	John Gordon, Balmuchy, Kearn,	...	...	...
18	"	Wester Ross	Walter Arnes, Fodderly Lodge, Dingwall,	13	13	0	Walter Arnes, Fodderly Lodge, Dingwall,	6 10 0	5 15 0	2 15 0
19	Roxburgh,	Kelso Analytical Association,	T. Balmer Dove, Kelso,	25	21	...	T. Balmer Dove, Kelso,	11 15 0	8 5 0	...
				255	255	236		4712 15 0	£112 5 0	£90 0 0

BOTANICAL DEPARTMENT.

Consulting Botanist to the Society.—A. N. M'ALPINE, Minto House,
Chambers Street, Edinburgh.

The Society have fixed the following rates of charge for the examination of plants and seeds for the *bona fide* and individual use and information of members of the Society (not being seedsmen), who are particularly requested when applying to the Consulting Botanist to mention the kind of examination they require, and to quote its number in the subjoined schedule. The charge for examination must be paid at the time of application, and the carriage of all parcels must be prepaid.

Scale of Charges.

1. A report on the purity, amount, and nature of foreign materials, 2s.
2. On the germinating power of a sample of seed, 2s.
3. Determination of the species of any weed or other plant, or of any vegetable parasite, with a report on its habits and the means for its extermination or prevention, 5s.
4. Report on any disease affecting farm crops, 5s.
5. Determination of the species of any natural grass or fodder plant, with a report on its habits and pasture or feeding value, 1s.

The Consulting Botanist's Reports are furnished to enable members—purchasers of seeds and corn for agricultural purposes—to test the value of what they buy, and are not to be used or made available for advertising or trade purposes by seedsmen or otherwise.

Instructions for Selecting and Sending Samples.

In sending seed or corn for examination, the utmost care must be taken to secure a fair and honest sample. In the case of grass seeds, the sample would be drawn from the centre of the sack or bag, and in all cases from the bulk delivered to the purchaser. If anything supposed to be injurious or useless exists in the corn or seed selected, samples should also be sent.

When possible, at least one ounce of grass and other small seeds should be sent, and two ounces of cereals or larger seeds. The exact name under which the seed has been bought (but preferable, a copy of the invoice) should accompany the sample.

Grass seeds should be sent at least four weeks, and clover seeds two weeks before they are to be used.

In collecting specimens of plants, the whole plant should be taken up and the earth shaken from the roots. If possible, the plants must be in flower or fruit. They should be packed in a light box, or in a firm paper parcel.

Specimens of diseased plants or of parasites should be forwarded as fresh as possible. Place them in a bottle, or pack them in tinfoil or oil silk.

All specimens should be accompanied with a letter specifying the nature of the information required, and stating any local circumstances (soil, situation, &c.), which in the opinion of the sender would be likely to throw light on the inquiry.

It is strongly recommended that members purchasing seeds should insist—

(1) Upon having from the seller a guarantee stating the purity and germination of the seed supplied.

(2) That the bulk be same as sample.

(3) That it contain not more than 5 per cent. other than the species ordered.

If the purity and germination of the seed is not known, then it is impossible to tell either its value, or the amount of seed to be sown.

It is also strongly recommended that the purchase of prepared mixtures should be avoided, and the different seeds to be sown should be purchased separately.

Parcels or letters containing seeds or plants for examination (carriage or postage paid) must be addressed to Professor M'Alpine, Botanical Laboratory, Minto House, Chambers Street, Edinburgh.

DAIRY DEPARTMENT.

The Society established in 1885 a Dairy Department, to promote the dairy interests.

[PREMIUMS.]

PREMIUMS.

GENERAL REGULATIONS FOR COMPETITORS.

1. It is to be distinctly understood that the Society is not responsible for the views, statements, or opinions of any of the writers whose papers are published in the *Transactions*.

2. All reports must be legibly written, and on one side of the paper only; they must specify the number and subject of the Premium for which they are in competition; they must bear a distinguishing motto, and be accompanied by a sealed letter similarly marked, containing the name and address of the Reporter—initials must not be used.

3. No sealed letter, unless belonging to a report found entitled to at least one-half of the Premium offered, will be opened without the author's consent.

4. Reports for which a Premium, or one-half of it, has been awarded, become the property of the Society, and cannot be published in whole or in part, nor circulated in any manner, without the consent of the Directors. All other papers will be returned to the authors if applied for within twelve months.

5. When a report is unsatisfactory, the Society is not bound to award the whole or any part of a Premium.

6. All reports must be of a practical character, containing the results of the writer's own observation or experiment, and the special conditions attached to each Premium must be strictly fulfilled. General essays, and papers compiled from books, will not be rewarded. Weights and measurements must be indicated by the Imperial standards.

7. The Directors, before awarding a Premium, shall have power to require the writer of any report to verify the statements made in it.

8. The decisions of the Board of Directors are final and conclusive as to all Premiums, whether for Reports or at General or District Shows; and it shall not be competent to raise any question or appeal touching such decisions before any other tribunal.

9. The Directors will welcome papers from any Contributor on any suitable subject not included in the Premium List; and if the topic and the treatment of it are both approved, the writer will be remunerated, and his paper published.

CLASS I.

REPORTS.

SECTION I.—THE SCIENCE AND PRACTICE OF AGRICULTURE.

FOR APPROVED REPORTS.

1. On the results of experiments for fixing and retaining the volatile and soluble ingredients in Farm-yard Manure—Twenty Sovereigns. To be lodged by 1st November in any year.

The Report must detail the treatment adopted to fix and retain these ingredients—the materials used for that purpose—and the quantity and cost thereof—comparative analyses of the manure with and without the treatment, and also a statement of the crops grown with manure and without such treatment, must be given by the Reporter. The experiments to have extended over at least two years and crops.

2. On the results of experiments for ascertaining the comparative value of Farm-yard Manure obtained from cattle fed upon different varieties of food, by the application of such manure to farm crops—Twenty Sovereigns. To be lodged by 1st November in any year.

The Report must state the effects produced on two successive crops by the application of manure obtained from cattle fed on different sorts of food, such as turnips and straw alone; and turnips and straw, with an addition of oil-cake, linseed, bean-meal, grain or other substances. The animals should be as nearly as possible of the same age, weight, condition, and maturity, and each lot should receive daily the same quantity of litter; and except as to the difference of food, they must be treated alike.

The preparation of the manure, by fermentation or otherwise, should be in every respect the same; and it is desirable that not less than two several experiments be made with each kind, and that the ground to which it is to be applied be as equal as possible in quality and condition.

3. On the hardy and useful Herbaceous Plants of any country, where such climate exists as to induce the belief that the plants may be beneficially introduced into the cultivation of Scotland—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

Attention is particularly directed to the Grains and Grasses of China, Japan, the Islands of the Eastern Archipelago, the Himalaya country, the Falkland and South Sea Islands, California, and the high north-western district of America.

Reporters are required to give the generic and specific names of the plants treated of, with the authority for the same—together with the native names, so far as known; and to state the elevation of the

locality and nature of the soil in which they are cultivated, or which they naturally inhabit, with their qualities or uses; and it is further requested that the descriptions be accompanied, in so far as possible, with specimens of the plants, and their fruit, seed, and other products.

4. On the comparative advantages of fattening Cattle in stalls, courts, or covered yards—Twenty Sovereigns. To be lodged by 1st November in any year.

The Report must detail the comparative result of actual experiments. The same quantities and kinds of food must be used. Information is required as to the comparative expense of attendance, the cost of erecting the buildings, and any other circumstances deserving of attention. The state of the weather during the experiment, in point of temperature and wetness, and the advantages or disadvantages of clipping cattle put up to feed, must be particularly noted and reported.

5. On experiments for ascertaining the actual addition of weight to growing or fattening Stock, by the use of different kinds of food—Twenty Sovereigns. To be lodged by 1st November in any year.

The attention of the Experimenter is directed to turnips, carrots, beet, mangold-wurzel, potatoes, cabbage, as well as to beans, oats, barley, Indian corn, linseed, oil-cake or rape-cake, and to the effect of warmth and proper ventilation, and the difference between food cooked and raw. The above roots and other kinds of food are merely suggested; competitors are neither restricted to them nor obliged to experiment on all of them.

When experiments are made with linseed and cake, attention should be paid to the comparative advantages, economically and otherwise, of the substance in these two states.

Before commencing the comparative experiments, the animals must be fed alike for some time previously.

The progress of different breeds may be compared. This will form an interesting experiment of itself, for Reports of which encouragement will be given.

N.B.—The experiments specified in the two previous subjects must be conducted over a period of not less than three months. No lot shall consist of fewer than four Cattle or ten Sheep. The animals selected should be of the same age, sex, and breed, and, as nearly as possible, of the same weight, condition, and maturity. The live weight before and after the experiment must be stated, and, if killed, their dead weight and quantity of tallow.

6. On the value of Fish Meal as a fodder for Cattle in comparison with other kinds of concentrated fodder—Fifteen Sovereigns. To be lodged by 1st November 1887.

The Report must detail the results of actual feeding experiments carried out quantitatively.

7. On the Comparative Feeding Value of Ensilage alone or with other ordinary Farm produce—Fifteen Sovereigns. To be lodged by 1st February 1888.

The Report must detail the comparative result of actual experiments; and the same quantities and kinds of food must be used.

8. On Pasture Plants, indigenous or naturalised—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November 1887.

The writer to give the results of his experience regarding the suitability of pasture plants for cultivation on various classes of land, and in different conditions of situation and climate.

9. On any useful practice in Rural Economy adopted in other countries, and susceptible of being introduced with advantage into Scotland—The Gold Medal. To be lodged by 1st November in any year.

The purposes chiefly contemplated by the offer of this premium is to induce travellers to notice and record such particular practices as may seem calculated to benefit Scotland. The Report to be founded on personal observation.

SECTION 2.—ESTATE IMPROVEMENTS.

FOR IMPROVED REPORTS.

1. By the Proprietor in Scotland who shall have executed the most judicious, successful, and extensive Improvement—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

Should the successful Report be written for the Proprietor by his resident factor or farm manager, a Minor Gold Medal will be awarded to the writer in addition to the Gold Medal to the Proprietor.

The merits of the Report will not be determined so much by the mere extent of the improvements, as by their character and relation to the size of the property. The improvements may comprise reclaiming, draining, enclosing, planting, road-making, building, and all other operations proper to landed estates. The period within which the operations may have been conducted is not limited, except that it must not exceed the term of the Reporter's proprietorship.

2. By the Proprietor in Scotland who shall have erected on his estate the most improved Farm-buildings—The Gold Medal. Reports, Plans, and Specifications to be lodged by 1st November in any year.

3. By the Proprietor or Tenant in Scotland who shall have reclaimed within the ten preceding years not less than forty acres of Waste Land—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

4. By the Tenant in Scotland who shall have reclaimed within the ten preceding years not less than twenty acres of Waste Land—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

5. By the Tenant in Scotland who shall have reclaimed not less than ten acres within a similar period—The Medium Gold Medal, or Five Sovereigns. To be lodged by 1st November in any year.

The Reports in competition for Nos. 3, 4, and 5 may comprehend such general observations on the improvement of waste lands as the writer's experience may lead him to make, but must refer especially to the lands reclaimed—to the nature of the soil—the previous state and probable value of the subject—the obstacles opposed to its improvement—the details of the various operations—the mode of cultivation adopted—and the produce and value of the crops produced. As the required extent cannot be made up of different patches of land, the improvement must have relation to one subject; it must be of profitable character, and a rotation of crops must have been concluded before the date of the Report. *A detailed statement of the expenditure and return and a certified measurement of the ground are requisite.*

6. By the Proprietor or Tenant in Scotland who shall have improved within the ten preceding years the Pasturage of not less than thirty acres, by means of top-dressing, draining, or otherwise, without tillage, in situations where tillage may be inexpedient—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

7. By the Tenant in Scotland who shall have improved not less than ten acres within a similar period—The Minor Gold Medal. To be lodged by 1st November in any year.

Reports in competition for Nos. 6 and 7 must state the particular mode of management adopted, the substances applied, the elevation and nature of the soil, its previous natural products, and the changes produced.

SECTION 3.—HIGHLAND INDUSTRIES AND FISHERIES.

FOR APPROVED REPORTS.

1. On the best Means of developing the Eel Fishing of Scotland, and of conveying the Fish to English Markets—Medium Gold Medal, or Five Sovereigns. To be lodged by 1st November 1887.

2. On the best Means of developing the Crab Fishery of Scotland—Medium Gold Medal, or Five Sovereigns. To be lodged by 1st November 1887.

SECTION 4.—MACHINERY.

FOR APPROVED REPORTS.

1. On the best and most improved Truck for conveying Dead Meats, Fish, &c., from long distances in hot weather—Twenty Sovereigns. To be lodged by 1st November 1887.

Reports must be accompanied by drawings and descriptions, or, if necessary, by a model.

SECTION 5.—FORESTRY DEPARTMENT.

FOR APPROVED REPORTS.

1. On Plantations of not less than eight years' standing formed on deep peat bog—The Medium Gold Medal, or Five Sovereigns. To be lodged by 1st November 1887.

The premium is strictly applicable to deep peat or flow moss; the condition of the moss previous to planting, as well as at the date of the Report, should, if possible, be stated.

The Report must describe the mode and extent of the drainage, and the effect it has had in subsiding the moss—the trenching, levelling, or other preliminary operations that may have been performed on the surface—the mode of planting—kinds, sizes, and number of trees planted per acre—and their relative progress and value, as compared with plantations of a similar age and description grown on other soils in the vicinity.

2. On the more extended introduction of hardy, useful, or ornamental Trees, which have not hitherto been generally cultivated in Scotland—The Medium Gold Medal, or Five Sovereigns. To be lodged by 1st November in any year.

The Report should specify as distinctly as possible the kind of trees introduced. The adaptation of the trees for use or ornament, and their comparative progress, should be mentioned. Attention is directed to the introduction of any tree as a nurse in young plantations, which by growing rapidly for several years, and attaining maturity when at the height of 20 or 25 feet, might realise the advantage and avoid the evils of thick planting.

3. On the varieties of Trees best adapted for planting as shelter in the Islands of Scotland—The Medium Gold Medal, or Five Sovereigns. To be lodged by 1st November 1887.

4. On the Diseases to which the Larch is subject—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November 1887.

The writer to describe the different diseases, and to state the manner in which they appear, and the parts affected, also the situations as to soil, climate, elevation, and exposure most liable to disease. The Report to be accompanied with specimens or illustrations of the various forms of disease, insects, &c.

5. On the Utilisation of Waste Produce of Forests and Woodlands—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November 1887.

6. On Osier or Willow Cultivation in Scotland—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November 1887.

The Report must indicate the most valuable and suitable varieties of willow, and must state whether irrigation is employed. The area under crop must not be less than one acre.

CLASS II.

DISTRICT COMPETITIONS.

REGULATIONS, 1887.

The Money Premiums and Medals awarded at District Competitions will be sent direct to the winners in January next. No payments must, therefore, be made by the Secretary or Treasurer of any local Association.

Grants in aid of DISTRICT COMPETITIONS for 1888 must be applied for before 1st November 1887, on Forms to be obtained from the Secretary. When a Grant has expired, the District cannot apply again for aid for two years.

SECTION 1.—GRANTS TO DISTRICT SOCIETIES FOR HORSES, CATTLE, SHEEP, AND PIGS.

1. CLASS OF STOCK—LIMIT OF GRANTS, £340.—The Highland and Agricultural Society will make Grants to District Societies to deal with, as in the opinion of the District Societies the need of each district may require, for such classes of breeding Stock of Horses, Cattle, Sheep, and Pigs as are embraced in the General Show Prize List of the Highland and Agricultural Society. The total sum to be expended by the Highland and Agricultural Society in such Grants shall not exceed the sum of £340 in any one year.

2. GRANT TO DISTRICT, £12.—The portion of the Grant to any one District Society shall not exceed the sum of £12 in any one year.

3. CONTINUANCE OF GRANT THREE YEARS—ADVERTISING.—The Grant shall continue for three alternate years, provided always that the District Society shall, in the two intermediate years, continue the competition by offering Premiums equal in amount to not less than one half the sum given by the Highland and Agricultural Society, and for the same class of Stock as that selected in each previous year to compete for the Highland and Agricultural Society's Prizes. The Prizes when given by the Highland and Agricultural Society must be announced as their gift.

4. MEDALS.—In the two alternate years the Highland and Agricultural Society will place three Minor Silver Medals at the disposal of the District Societies, for the same classes of Stock as those for which the Money Premiums are offered, provided that not less than three lots are exhibited in the same class.

5. RULES OF COMPETITION.—The Rules of Competition for the Premiums, the Funds for which are derived from Grants of the Highland and Agricultural Society, shall be such as are generally enforced by the Society receiving the Grant for Premiums offered by itself.

6. AREA AND PARISHES—FIVE PARISHES.—When making application for Grants from the Highland and Agricultural Society, the District Society must delineate the area and the number of Parishes comprised in the district, and, *except in special cases*, no District Society shall be entitled to a Grant whose show is not open to at least five Parishes.

7. NOMINATION OF MEMBERS.—At the time of making a Grant to a District Society, the Directors shall nominate one or more members of the

Highland and Agricultural Society resident in the district, whose duty it shall be to see that the conditions imposed by the Board are complied with.

8. **REPORTS.**—Blank Reports will be furnished to the Secretaries of the different District Societies. These Reports must in all details be completed and lodged with the Secretary of the Highland and Agricultural Society on or before the 1st of November next following the competition, both in the years when the Grant is given and in the two intermediate years, for the approval of the Directors of the Highland and Agricultural Society, against whose decision there shall be no appeal. All such Reports must be signed and certified by the Members of the Highland and Agricultural Society nominated under Rule 7.

9. **GRANTS—WHEN PAID.**—The Grants made to District Societies will be paid in the January following the competition, by Precepts issued by the Directors of the Highland and Agricultural Society to the winners of the prizes. No payments of these Grants must be made by the Secretary or Treasurer of any District Society. Medals will be issued at the same time.

10. **RENEWAL OF APPLICATION.**—No application for renewal of a Grant to a District Society will be entertained until the expiration of two years from the termination of the last Grant.

11. **DISPOSAL OF APPLICATIONS.**—In disposing of applications for District Grants, the Directors of the Highland and Agricultural Society shall keep in view the length of interval that has elapsed since the expiration of the last Grant, giving priority to those District Societies which have been longest off the list.

12. **DAIRY PRODUCE.**—Upon application being made by District Societies, a limited number of Medals will be placed at the disposal of District Societies for Dairy Produce.

N.B.—**EXISTING GRANTS.**—District Societies holding Grants under existing regulations shall have the option of continuing upon the present basis, or of placing themselves under the new regulations for the remaining years in which they are entitled to a Grant.

DISTRICTS.

1. **GARIOCH FARMERS' CLUB.**—*Convener*, Alex. M. Gordon of Newton, Inch; *Secretary*, William Home, Newton of Ardoyne, Inch. Granted 1887.
2. **DALBEATTIE AGRICULTURAL SOCIETY.**—*Convener*, Wellwood H. Maxwell of Munches; *Secretary*, R. W. Macnab, Union Bank, Dalbeattie. Granted 1887.
3. **GARGUNNOCK FARMERS' CLUB.**—*Convener*, John Inglis, Keadarroch. Gargunnoch; *Secretary*, M. C. Stark, Westerton, Doune. Granted 1887.
4. **SUTHERLAND FARMERS' CLUB.**—*Convener*, J. B. Dudgeon, Crakaig, Golspie; *Secretary*, George R. Lawson, Golspie. Granted 1887.
5. **STRANRAER AND RHINS OF GALLOWAY AGRICULTURAL SOCIETY.**—*Convener*, R. Vans Agnew of Sheuchan, Park House, Stranraer; *Secretary*, Hugh Adair, National Bank, Stranraer. Granted 1887.

SECTION 2.—GRANTS TO HORSE ASSOCIATIONS, &c., FOR STALLIONS FOR AGRICULTURAL PURPOSES.

1. **HORSES—LIMIT OF GRANT, £210.**—The Highland and Agricultural Society will make Grants to Horse Associations and other Societies in different districts engaging stallions for agricultural purposes. The total sum expended by the Highland and Agricultural Society in such Grants shall not exceed the sum of £210 in any one year.

2. GRANT TO EACH, £15.—The portion of the Grant to any one Horse Association, &c., shall not exceed the sum of £15 in any one year.

3. CONTINUANCE OF GRANT THREE YEARS.—INTERMEDIATE YEAR. The grant shall continue for three alternate years, provided always that the Horse Association or Society shall, in the two intermediate years, offer at least a sum equal in amount to that granted by the Highland and Agricultural Society for the hire of a Horse in connection with the Association or Society to whom the Grant is made.

4. NOMINATION OF MEMBERS.—At the time of making the Grant to a Horse Association or Society, the Directors of the Highland and Agricultural Society shall nominate one or more members of the Highland and Agricultural Society, resident in the Districts in which the Society benefited is located, whose duty it shall be to see that the conditions imposed by the Board are complied with.

5. REPORTS—PENALTY FOR NOT ENGAGING HORSE.—No grant by the Highland and Agricultural Society to Horse Associations, &c., will be paid unless a report, signed and certified by the members appointed under Rule 4, be furnished to the Highland and Agricultural Society not later than the 1st of November in each year in which the Grant is made, and also in the alternate years, stating that a Horse has been engaged by the Horse Association or other Society to whom the Grant is made, and in the event of a Horse not being engaged in any one year while the provisions of the Grant are in force, the Grant made by the Highland and Agricultural Society will cease.

RULES 9 (Time of Payment), 10 (Renewal of Grant), and 11 (Disposal of Applications), applicable to section 1, shall be applicable to Section 2.

DISTRICT.

SELKIRK AND GALASHIELS DISTRICT SOCIETY.—*Convener*, John Scott of Gala, Galashiels; *Secretary*, Andrew T. Elliot, Newhall, Galashiels. Granted 1887.

DISTRICT COMPETITIONS.

Premiums granted prior to 1887.

SECTION 1.—CATTLE.

Note.—The Society's Cattle Premiums were granted to each District for three alternate years, on condition that the District shall, in the two intermediate years, continue the Competitions by offering for the same description of Stock a sum not less than one-half of that given by the Society.

At the intermediate Competitions, three Minor Silver Medals will be placed at the disposal of the Committee, to be given along with the first prize in the three Classes of Cattle, provided there are not fewer than three lots exhibited in each Class.

The selection of the Breed is left to the local Committee.

DISTRICTS.

1. ROYAL NORTHERN AGRICULTURAL SOCIETY.—*Convener*, Alex. Forbes Irvine of Drum, Drumoak; *Secretary*, George Bruce, 35 Market Street, Aberdeen. Granted 1886.

2. STRATHBOGIE FARMERS' CLUB.—*Convener*, James Bruce, Collithy, Gartly; *Secretary*, Andrew Cruickshank, 37 Gordon Street, Huntly. Granted 1886.
3. UNITED BANFFSHIRE SOCIETY.—*Convener*, John Hannay, Gavenwood, Banff; *Secretary*, Alexander Duncan, Banker, Banff. Granted 1886.

PREMIUMS.

1. Best Bull, 3-year old and upwards, of any pure breed,	£3
Second best,	£2
Third best,	£1
2. Best Bull, 2-year old and under, of any pure breed,	£3
Second best,	£2
Third best,	£1
3. Best 2-year old Heifer (if Highland breed, 3 years), of any pure breed,	£3
Second best,	£2
Third best,	£1
	<hr/>
	£18

The dates of calving of cattle will be counted as from on and after January 1, except Aberdeen-Angus, which will be counted as from on and after December 1.

In 1887.

Nos. 1, 2, and 3 compete for local Premiums.

SECTION 2.—HORSES.

FOR AGRICULTURAL PURPOSES.

Note.—The Society's Stallion Premiums are granted to each District for two years, and are followed by Premiums for other two years for Brood Mares, and again for a similar period by Premiums for Entire Colts and Fillies.

1. STALLIONS.

1. INVERNESS FARMERS' SOCIETY.—*Convener*, Duncan Forbes of Culloden, Inverness; *Secretary*, George A. Walker, Torbreck, Inverness. Granted 1885. (One year in abeyance.)
2. KINROSS-SHIRE SOCIETY.—*Convener*, Harry Young of Cleish Castle, Kinross; *Secretary*, Thomas Beveridge, Balado, Kinross. Granted 1886.

PREMIUM.

Best Stallion, rising 3 and not above 12 years old, £15

In 1887.

Nos. 1 and 2 are in competition for the last year.

2. BROOD MARES.

1. DUMBARTONSHIRE SOCIETY.—*Convener*, P. B. Smollett of Bonhill, Cameron House, Alexandria, N.B.; *Secretary*, Thomas M'Lean, 225 Bank Street, Alexandria, N.B. Granted 1887.

2. LOWER DISTRICT OF WIGTOWNSHIRE HORSE BREEDING ASSOCIATION.—
Convener, James Drew of Craigencaillie, Doonhill, Newton Stewart;
Secretary, A. B. Matthews, British Linen Company Bank, Newton
 Stewart. Granted 1887.

PREMIUMS.

1. Best Brood Mare,	£4
Second best,	£3
	—
	£7

In 1887.

Nos. 1 and 2 are in competition for the first year.

3. ENTIRE COLTS AND FILLIES.

1. LOWER WARD OF RENFREWSHIRE.—*Convener*, Horatio R. B. Peile,
 Mansion House, Greenock; *Secretary*, John W. Crawford, 26
 Hamilton Street, Greenock. Granted 1886.
2. VALE OF ALFORD.—*Convener*, R. O. Farquharson of Haughton, Alford;
Secretary, John Reid, Bents, Alford. Granted 1886.
3. LOWER ANNANDALE.—*Convener*, A. H. Johnstone Douglas of Lockerbie,
 Comlongan Castle, Annan; *Secretary*, William Roddick, Annan.
 Granted 1887.
4. KIRRIEMUIR DISTRICT AGRICULTURAL ASSOCIATION.—*Convener*, T. M.
 Nicoll, Littleton, Kirriemuir; *Secretary*, Andrew Osler, Kintyrie,
 Kirriemuir. Granted 1887.
5. DUNBLANE, DOUNE, AND CALLANDER FARMERS' CLUB.—*Convener*, Sir
 James R. Gibson-Maitland of Barnton, Bart., Craigend House,
 Stirling; *Secretary*, John Murray, Munnieston, Thornhill, Stirling.
 Granted 1887.

PREMIUMS.

1. Best Entire Colt, foaled after 1st January 1885,	£2	0	0
Second best,	£1	0	0
2. Best Entire Colt, foaled after 1st January 1886,	£2	0	0
Second best,	£1	0	0
3. Best Filly, foaled after 1st January 1885,	£2	0	0
Second best,	£1	0	0
Third best,	£0	10	0
4. Best Filly, foaled after 1st January 1886,	£2	0	0
Second best,	£1	0	0
Third best,	£0	10	0
	£13	0	0

In 1887.

Nos. 1 and 2 are in competition for the last year.

Nos. 3, 4, and 5 for the first year.

SECTION 3.—SHEEP.

Note.—The Society's Sheep Premiums are granted to each District for three alternate years, on condition that the District shall, in the two intermediate years, continue the Competitions by offering for the same description of Stock a sum not less than one-half of that given by the Society.

At the intermediate Competitions, four Minor Silver Medals will be placed at the disposal of the Committee, to be given along with the first prize in the four Classes of Sheep, provided there are not less than three lots exhibited in each Class.

The selection of the Breed is left to the Local Committee. See Rule 6.

DISTRICTS.

1. DISTRICT OF LOCHABER.—*Convener*, D. P. McDonald, Invernevis, Fort-William; *Secretary*, D. Sinclair, Achintee, Fort-William. Granted 1880. (In abeyance in 1884, 1885, and 1886.)
2. BADENOCH AND ROTHIE-MURCHUS FARMERS' SOCIETY.—*Convener*, Cluny Macpherson, Cluny Castle, Kingussie; *Secretary*, A. F. Fyfe, Kingussie. Granted 1885.
3. WEST TEVIOTDALE.—*Convener*, W. Elliott Lockhart of Borthwickbrae, Branxholme, Hawick; *Secretary*, James Oliver of Thornwood, Hawick. Granted 1885.
4. ARRAN FARMERS' SOCIETY.—*Convener*, Patrick Murray, Strabane, Brodick; *Secretary*, William Tod, Glenree, Lamblash. Granted 1886.

PREMIUMS.

1. Best Tup above One Shear,	.	.	.	.	.	£2
Second best,	.	.	.	.	.	£1
2. Best Shearling Tup,	.	.	.	.	.	£2
Second best,	.	.	.	.	.	£1
3. Best 3 Ewes above One Shear,	.	.	.	.	.	£2
Second best,	.	.	.	.	.	£1
4. Best 3 Gimmers or Shearling Ewes,	.	.	.	.	.	£2
Second best,	.	.	.	.	.	£1
						<hr/>
						£12

In 1887.

No. 1 is in competition for last year.

Nos. 2 and 3 for the second year.

No. 3 competes for local Premiums.

SECTION 5.—DAIRY PRODUCE.

Note.—The Society's Dairy Produce Premiums are granted to each District for three alternate years, on condition that the District shall, in the two intermediate years, continue the Competitions by offering for the same description of Cheese and Butter a sum not less than one-half of that given by the Society.

At the intermediate Competitions, two Minor Silver Medals will be placed at the disposal of the Committee, to be given along with the first prize in the two classes of Dairy Produce, provided there are not less than three lots exhibited in each Class.

DISTRICT.

FORTH DAIRY PRODUCE AND CATTLE SHOW SOCIETY.—*Convener*, Gavin Hamilton of Auldtown, Lesmahagow; *Secretary*, Adam M'Kendrick, Forth. Granted 1883.

PREMIUMS.

1. Best Couple of Sweet Milk Cheeses,	. . . . .	£2
Second best,	. . . . .	£1
2. Best Cured Butter (not less than 14 lbs.),	. . . . .	£2
Second best,	. . . . .	£1
		<hr/>
		£6

In 1887.

The District of Forth competes for the last year.

RULES OF COMPETITION.

Applicable to Grants prior to 1887.

1. The Members of the Highland and Agricultural Society connected with the respective districts are appointed Committees for arranging the Competitions, the Convener being appointed by the Directors; five members to be a quorum.

2. The Convener of each district shall summon a meeting of Committee for the purpose of determining the time and place of Competition, the nomination of Judges, and other preliminary arrangements. The time and place (which must be within the bounds of the District, unless in reference to Stallions) shall be publicly intimated by Conveners.

3. The Money Premiums awarded at District Competitions will be paid in January next, by precepts issued by the Directors. No payments must, therefore, be paid by the Secretary or Treasurer of any local Association. Medals will be issued at same time.

4. Stock must be the property of the Exhibitor at the date of Entry. *No entry shall be received later than one week previous to the Show.* Entry-Money shall not exceed 2½ per cent. on the amount of the Premium to be competed for.

5. The Competitions (except for Stallions to serve in the District) must take place between the 1st of April and the 26th of October, and are open to general competition to all parties within the boundaries of the District of the local Society, whether members of the local Association or not. The Stallion Premiums are open to all comers, or the Horses may be selected at the Glasgow Stallion Show on permission to that effect being obtained.

6. The Committee shall select the breed, and specify it in the returns. In Cattle the animals exhibited must belong to one of the following pure breeds—Shorthorn, Ayrshire, Polled (Galloway, Aberdeen-Angus), Highland. The Bulls may be of one breed, and the Heifers of another. In Sheep, the breeds must be Leicester, Cheviot, or Blackfaced.

7. Stock of an inferior description, or which does not fall within the prescribed regulations, shall not be placed for competition.

8. The Premiums shall not be divided. In Cattle, Horses (except Stallions to serve in the District), Sheep, and Swine, five lots in each Class will warrant the award of full, and three lots of half, Premiums. In Dairy Produce, eight Exhibitors in any one Class will warrant an award of full, and four of half, Premiums. A Competitor may exhibit two lots in each Class, except in Dairy Produce, where only one lot is allowed from the same farm. No animal to be allowed to compete in more than one section.

9. To authorise the award of the Medals in the intermediate year, there must be not less than three lots in each Class, and the Society's Regulations must be adhered to.

10. An animal which has gained the Highland and Agricultural Society's first Money Premium at a previous District or General Show is inadmissible in the same Class (except in the case of Stallions); and one which has gained a second Money Premium can only thereafter compete in that Class for the first.

11. A Bull the property of two or more Tenants may compete, although the Exhibitors may not be Joint-Tenants.

12. Bulls for which Money Premiums are awarded may be required to serve in the District at least one season; the rate of service to be fixed by the Committee, and the prizes may be withheld till the conditions are fulfilled. Premiums for the Heifers may be retained till the animals are certified to have calved.

13. Evidence must be produced that the Prize Stallions have had produce.

14. Mares must have foals at foot, or be entered as being in foal; in the latter case payment of the Premiums will be deferred till certificate of birth, which must be within 11 months from the date of the Show.

15. All Prize Tups must serve within the District during the season following the Competition. Ewes and Gimmers must be taken from the Exhibitor's stock, and must have been bred by him in the District; and Ewes must have reared Lambs during the ordinary season of the District.

16. Sheep must have been clipped bare during the season, and the Judges are instructed to examine the fleeces of the sheep selected for prizes, and to cast those on which they find any of the former fleece.

17. Should it be proved to the satisfaction of the Committee that an animal has been entered under a false name, pedigree, or description, for the purpose of misleading the Committee or Judges as to its qualification or properties, the case shall be reported to the Directors, and submitted by them to the first General Meeting, in order that the Exhibitor may be disqualified from again competing for the Society's Premiums, and his name, if he is a member, struck from the roll, or his case otherwise disposed of as the Directors may determine.

18. When an animal has previously been disqualified by the decision of any Agricultural Association in Great Britain or Ireland, such disqualification shall attach, if the Exhibitor, being aware of the disqualification, fail to state it and the grounds thereof, in his entry, to enable the Committee to judge of its validity.

19. Competitors must certify that the Butter and Cheese exhibited by them are average specimens of the produce of their dairies in 1887, and that the quantity produced during the season has not been less than 1 cwt. of Butter, or 2 cwt. of Cheese.

20. It is to be distinctly understood that in no instance does any claim lie against the Highland and Agricultural Society for expenses attending a show of stock beyond the amount of Premiums offered.

21. Blank reports will be furnished to the Conveners and Secretaries of the different Districts. These must, in all details, be completed, and lodged

with the Secretary *on or before the 1st of November next*, for the approval of the Directors, against whose decisions there shall be no appeal.

22. A report of the Competitions and Premiums awarded at the *intermediate* local shows in the several Districts for Cattle and Sheep, signed by a member of the Society, must be transmitted to the Secretary *on or before the 1st of November in each year*, otherwise the Society's grants shall terminate.

SECTION 6.—SPECIAL GRANTS.

£50 to the Glasgow Agricultural Society.—*Joint-Secretaries*, David Inglis and Andrew Todd, 147 St Vincent Street, Glasgow. Granted 1884.

£20 to the Ayrshire Agricultural Association, to be competed for at the Dairy Produce Show at Kilmarnock.—*Convener*, The Hon. G. R. Vernon, Auchans House, Kilmarnock; *Secretary*, James M'Murtrie, Ayr. Granted 1872.

£3 to Orkney Agricultural Society.—*Convener*, Colonel Balfour of Balfour and Trenabie, Kirkwall; *Secretary*, James Johnston, Orphir House, Orkney. Granted 1883.

£3 to Rousay Agricultural Society.—*Convener*, General Burroughs of Rousay, C.B.; *Secretary*, R. Mainland, Banks, Frotoft, Rousay. Granted 1883.

£3 to Shetland Agricultural Society.—*Convener and Secretary*, G. M. Hamilton, Symbister, Lerwick. Granted 1886.

SECTION 7.—MEDALS IN AID OF PREMIUMS GIVEN BY LOCAL SOCIETIES.

The Society, being anxious to co-operate with local Associations, will give a limited number of Minor Silver Medals annually to Societies, not on the list of Cattle, Horse, or Sheep Premiums, in addition to the Money Premiums awarded in the Districts for—

1. Best Bull, Cow, Heifer of any pure breed, or Ox.
2. Best Stallion, Mare, or Gelding.
3. Best Tup, or Pen of Ewes or Wethers.
4. Best Boar, Sow, or Pig.
5. Best Coops of Poultry.
6. Best Sample of any variety of Wool.
7. Best Sample of any variety of Seeds.
8. Best managed Farm.
9. Best managed Green Crop.
10. Best managed Hay Crop.
11. Best managed Dairy.
12. Best Sweet Milk Cheese.
13. Best Cured Butter.
14. Best sample of Honey, not less than 5 lbs., taken without destroying the bees.
15. Best collection of Roots.
16. Best kept Fences.

17. Male Farm Servant who has been longest in the same service, and who has proved himself most efficient in his duties, and to have invariably treated the animals under his charge with kindness.
18. Female Servant in charge of Dairy and Poultry who has been longest in the same service, and who has proved herself most efficient in her duties, and to have invariably treated the animals under her charge with kindness.
19. Best Sheep Shearer.
20. Most expert Hedge Cutter.
21. Most expert Labourer at Draining.
22. Most expert Farm Servant at trial of Reaping Machines.
23. Best Maker of Oat Cakes.

It is left to the local Society to choose out of the foregoing list the classes for which the Medals are to be competed.

The Medals granted previous to 1887 are for five years ; those granted in 1887 are for two years.

Aberdeenshire.

1. **INSCH HORTICULTURAL SOCIETY.**—*Convener*, W. F. G. Dawson, Inch ; *Secretary*, Alexander Henderson, Greenhaugh Cottage, Inch. 2 Medals. Granted 1887.
2. **NEWHILLS AND DYCE ASSOCIATION.**—*Convener*, George Reid, Clinterty, Blackburn ; *Secretary*, John Dawson, Sunnybrae, Auchmill, Newhills. 1 Medal. Granted 1887.
3. **NORTH OF SCOTLAND APTARIAN SOCIETY.**—*Convener*, W. H. Lumsden of Balmedie, Aberdeen ; *Secretary*, G. B. Black, 1 Laurelwood Avenue, Aberdeen. 2 Medals. Granted 1887.
4. **SLAINS ASSOCIATION.**—*Convener*, Randal Macdonald, Cluny Castle, Aberdeen ; *Secretary*, Alex. Sim, Clochton, Slains, Ellon. 2 Medals. Granted 1886.
5. **VALE OF ALFORD TURNIP-GROWING ASSOCIATION.**—*Convener*, R. O. Farquharson of Haughton, Alford ; *Secretary*, John Reid, Bents, Alford. 2 Medals. Granted 1885.

Ayrshire.

6. **COLMONELL AND BALLANTRAE SOCIETY.**—*Convener*, Robert P. Wright, Downan, Ballantrae ; *Secretary*, Henry Campbell, Commercial Bank, Ballantrae. 3 Medals. Granted 1886.
7. **DALRYMPLE FARMERS' SOCIETY.**—*Convener*, David Hunter, Guiltreehill, Maybole ; *Secretary*, R. A. Blair, Holmes Farm, Dalrymple. 2 Medals. Granted 1886.
8. **DARVEL HORTICULTURAL AND DAIRY PRODUCE SOCIETY.**—*Convener*, John Nisbet, Longgreen, Newmilns, Kilmarnock ; *Secretary*, Peter Gorrie, Schoolhouse, Darvel. 4 Medals. Granted 1886.
9. **GIRVAN SOCIETY.**—*Convener*, The Earl of Stair, K.T., Bargany, Girvan ; *Secretary*, Thomas M'Connochie, Royal Bank, Girvan. 2 Medals. Granted 1885.

10. IRVINE FARMERS' SOCIETY.—*Convener*, James Stewart, Heathfield, Irvine; *Secretary*, A. C. M'Jannet, Writer, Irvine. 2 Medals. Granted 1886.
11. KILMARNOCK SOCIETY.—*Convener*, Robert Guthrie, Crossburn, Troon; *Secretary*, Jas. Wilson, Banker, Kilmarnock. 4 Medals. Granted 1882. (In abeyance in 1883.)
12. MONKTON, NEWTON, PRESTWICK, AND ST QUIVOX SOCIETY.—*Convener*, Wm. Young, Shields, Monkton; *Secretary*, James Howat, The School, Prestwick. 2 Medals. Granted 1886.
13. PATNA FARMERS' SOCIETY.—*Convener*, W. M. S. Howatson, Carskeoch, Patna; *Secretary*, William Crosbie, Patna. 3 Medals. Granted 1885.
14. STEWARTON FARMERS' SOCIETY.—*Convener and Secretary*, John Lindsay, Thornhill Farm, Steventon. 3 Medals. Granted 1887.

Berwickshire.

15. EAST OF BERWICKSHIRE ASSOCIATION.—*Convener*, Adam S. Logan, Ferney Castle, Reston; *Secretaries*, Bowhill & Doughty, Ayton. 3 Medals. Granted 1883.

Dumbartonshire.

16. CUMBERNAULD SOCIETY.—*Convener*, J. W. Burns of Kilmahew, Cardross; *Secretary*, John Longwill, Royal Bank, Cumbernauld. 3 Medals. Granted 1886.

Dumfriesshire.

17. NITHSDALE AGRICULTURAL SOCIETY.—*Convener*, James Hewetson, Auchembainzie, Thornhill; *Secretary*, Wm. Austin, Banker, Thornhill. 4 Medals. Granted 1887.

Inverness-shire.

18. GLEN URQUHART FARMERS' SOCIETY.—*Convener and Secretary*, Major Grant, Glen Urquhart. 2 Medals. Granted 1887.
19. INVERNESS FARMERS' SOCIETY.—*Convener and Secretary*, George A. Walker, Torbreck, Inverness. 5 Medals. Granted 1884.
20. STRATHGLASS FARMERS' SOCIETY.—*Convener*, Lord Lovat, Beaufort Castle, Beaully; *Secretary*, James Fraser, Mauld, Beaully. 2 Medals. Granted 1886.

Lanarkshire.

21. CADDIE DISTRICT AGRICULTURAL SOCIETY.—*Convener*, James Craig, Robroyston, Bishopbriggs; *Secretary*, J. Stewart, 4 Parliamentary Road, Glasgow. 2 Medals. Granted 1887.
22. CARMUNNOCK FARMERS' SOCIETY.—*Convener and Secretary*, William Fleming, Windlaw, Carmunnock. 2 Medals. Granted 1883. (In abeyance in 1885 and 1886.)
23. OLD MONKLAND SOCIETY.—*Convener*, Wm. J. Andrew, Banker, Coatbridge; *Secretary*, John Couper, National Bank, Coatbridge. 1 Medal. Granted 1883.

Nairnshire.

24. NAIRNSHIRE ORNITHOLOGICAL ASSOCIATION.—*Convener*, R. Anderson of Lochdhu, Nairn; *Secretary*, A. Mackintosh, Gordon Street, Nairn. 4 Medals. Granted 1885.

Orkney.

25. ROUSAY SOCIETY.—*Convener*, General Burroughs of Rousay, C.B.; *Secretary*, John Gibson, Langskail, Rousay. 2 Medals. Granted 1886.

Perthshire.

26. DUNBLANE POULTRY, &C., SOCIETY.—*Convener*, Peter M'Caull, Dykedale, Dunblane; *Secretary*, David Sword, Helensfield, Dunblane. 2 Medals. Granted 1884.
27. DUNBLANE AGRICULTURAL SOCIETY.—*Convener*, P. Stirling, of Kippen-davie; *Secretary*, D. T. Reid, Dunblane. 1 Medal. Granted 1885.

Renfrewshire.

28. JOHNSTONE WEST OF SCOTLAND SOCIETY.—*Convener*, Robert Wilson, Manswrae, Kilbarchan; *Secretary*, Robert Reid, Banker, Johnstone. 2 Medals. Granted 1883.
29. MEARNS SOCIETY.—*Convener*, John Pollok, Blackhouse, Newton Mearns; *Secretary*, James Pollock, Union Bank, Barrhead. 2 Medals. Granted 1885.
30. NEILSTON AGRICULTURAL SOCIETY.—*Convener*, John Holm, Japston, Neilston; *Secretary*, A. R. Ferguson, Neilston. 2 Medals. Granted 1887.

Ross-shire.

31. DINGWALL ORNITHOLOGICAL SOCIETY.—*Convener*, A. R. Mackenzie, yr. of Kintail, Clunes, Kirkhill, Inverness; *Joint-Secretaries*, David Ross, Banker, Dingwall, and David Munro, 65 High Street, Dingwall. 2 Medals. Granted 1887.
32. NORTHERN PASTORAL CLUB.—*Convener*, Peter Robertson, Achilty, Dingwall; *Secretary*, Alex. Gunn, Balloan, Muir of Oril. 4 Medals. Granted 1885.

Applications from other Districts must be lodged with the Secretary of the Society by 1st November next.

RULES OF COMPETITION.

1. All Competitions must be at the instance of a local Society.
2. The classes for which Medals are granted must be in accordance with the list at pages 58 and 59. The Committee shall select the classes, and specify them in the return.
3. In each District the Convener (who must be a member of the Society appointed by the Directors) shall fix the time and place of Competition, appoint the Judges, and make all other necessary arrangements, in concurrence with the other members of the Society, and the local Association of the District.
4. The Money Premiums given in the District must be £2 for each Medal claimed.

5. The Medal for Sheep Shearing shall not be awarded unless there are three competitors, and it shall always accompany the highest Money Premium. There must not be fewer than two competitors in all the classes.

6. Blank reports will be furnished to all the Conveners and Secretaries of the different Districts. These must, in all details, be completed and lodged with the Secretary *on or before the 1st of November next*, with the exception of green crop reports, which must be forwarded on or before the 20th of December. for the approval of the Directors, against whose decisions there shall be no appeal.

7. When a grant has expired, the District cannot apply again for aid for two years.

SECTION 8.—PLOUGHING COMPETITIONS.

The Minor Silver Medal will be given to the winner of the first or highest Premium at Ploughing Competitions, provided a Report in the following terms is made to the Secretary, within one month of the Competition, by a Member of the Society:—

FORM OF REPORT.

I _____ of _____ Member of the Highland and
Agricultural Society, hereby certify that I attended the Ploughing
Match of the _____ Association at _____ in the county
of _____ on the _____ when _____ ploughs
competed : _____ of land were assigned to each, and _____ hours
were allowed for the execution of the work. The sum of £
was awarded in the following proportions, viz. :—

[Here enumerate the names and designations of successful Competitors.]

RULES OF COMPETITION.

1. All Matches must be at the instance of a local Society or Ploughing Association, and no Match at the instance of an individual, or confined to the tenants of one estate, will be recognised.

2. The title of such Society or Association, together with the name and address of the Secretary, must be registered with the Secretary of the Highland and Agricultural Society, 3 George IV. Bridge, Edinburgh.

3. Not more than one Match in the same season can take place within the bounds of the same Society or Association.

4. All reports must be lodged within one month of the date of the Match, and certified by a Member of the Highland and Agricultural Society who was present at it.

5. A Member can only report one Match, and a Ploughman cannot carry more than three Medals in the same season.

6. To warrant the grant of the Medal there must have been twelve ploughs in Competition, and Three Pounds awarded in Premiums by the local Society. The Medal to be given to the winner of the first or highest prize.

7. Ploughmen shall not be allowed any assistance, and their work must not be set up nor touched by others; on land of average tenacity the ploughing should be at the rate of an imperial acre in ten hours, and attention should be given to the firmness and sufficiency of the work below more than to its neatness above the surface.

CLASS III.

COTTAGES AND GARDENS.

The following Premiums are offered for Competition in the Parishes after mentioned.

The Premiums granted previous to 1887 are for five years; those granted in 1887 are for two years.

SECTION 1.—PREMIUMS FOR BEST KEPT COTTAGES AND GARDENS.

1. Best kept Cottage,	.	.	.	.	£1	0	0
Second best,	.	.	.	.	0	10	0
2. Best kept Cottage Garden,	.	.	.	.	1	0	0
Second best,	.	.	.	.	0	10	0

Argyllshire.

1. LORN HORTICULTURAL SOCIETY.—*Convener*, W. Hosack, Oban; *Secretary*, Arch. Campbell, Oban. Granted 1884.
2. MORVEN.—*Convener*, T. W. Murray Allan of Glenfeochan, Oban; *Secretary*, Arch. Campbell, Oban. Granted 1886. (In abeyance in 1886.)

Fife-shire.

3. KINGSKETTLÉ HORTICULTURAL SOCIETY.—*Convener*, William Dingwall, Ramornie, Ladybank; *Secretary*, John Scott, Kettle Bridge, Kettle. Granted 1883.
4. MARKINCH COTTAGE GARDENING SOCIETY.—*Convener*, Neil Ballingall, Sweetbank, Markinch; *Secretary*, Alex. Scott, Markinch. Granted 1887.

Inverness-shire.

5. INVERNESS HORTICULTURAL SOCIETY.—*Convener*, Duncan Forbes of Culloden, Inverness; *Secretary*, Thos. Findlay, Inverness. Granted 1887.

Stewartry of Kirkcudbright.

6. CORSOCK HORTICULTURAL SOCIETY.—*Convener*, H. Murray Dunlop of Corsock, Dalbeattie; *Secretary*, Miss Murray Dunlop, Corsock, Dalbeattie. Granted 1885.
7. CROSSMICHAEL HORTICULTURAL SOCIETY.—*Convener*, Robert Stewart of Culgruff, Castle-Douglas; *Secretary*, Mrs Stewart, The Manse, Cross-michael. Granted 1886.

Lanarkshire.

8. HAMILTON HORTICULTURAL SOCIETY.—*Convener*, William Forrest of Lawmuir, Hamilton; *Secretary*, David N. Cross, 31 Lamb Street, Hamilton. Granted 1886.
9. LARKHALL HORTICULTURAL SOCIETY.—*Convener*, William Forrest of Lawmuir, Hamilton; *Secretary*, Robert Cooper, jun., Braehead, Larkhall. Granted 1883. (In abeyance in 1886.)

Linkithgowshire.

10. KIRKLISTON HORTICULTURAL SOCIETY.—*Convener*, Peter Glendinning, The Leuchold, Dalmeny Park, Edinburgh; *Secretary*, James Brown, Schoolhouse, Kirkliston. Granted 1882. (In abeyance in 1885 and 1886.)
11. TORPHICHEN HORTICULTURAL SOCIETY.—*Convener*, Colonel Gillon of Wallhouse, Bathgate; *Secretary*, James More, Torphichen, Bathgate. Granted 1882. (In abeyance in 1885 and 1886.)

Perthshire.

12. ALYTH HORTICULTURAL SOCIETY.—*Convener*, John D. Fell, Blairgowrie; *Secretary*, David S. Johnstone, Alyth. Granted 1887.

Renfrewshire.

13. ERSKINE HORTICULTURAL SOCIETY.—*Convener*, Henry B. McKie, Freeland, Erskine, Glasgow; *Secretary*, George Williamson, Gladstone Cottage, Bishopston. Granted 1887.

Ross-shire.

14. NOVAR HORTICULTURAL SOCIETY.—*Convener*, Donald M'Raw, Moultaivie, Alness; *Secretary*, William Walker, Contullich, Alness. Granted 1886.

RULES OF COMPETITION.

1. Competitions may take place in the different parishes for Cottages and Gardens, or for either separately.

2. The occupiers of Lodges at Gentlemen's Approach Gates and Gardener's Houses are excluded, as well as others whom the Committee consider, from their position, not to be entitled to compete. The inspection must be completed by the 1st of October. In making the inspection, the Conveners may take the assistance of any competent judges.

3. It is left to the Committee of the District to regulate the maximum annual rent of the Cottages, which may, with the garden, be from £5 to £7.

4. To warrant the award of full Premiums, there must not be fewer than three competitors in each class. If there are less than three competitors in each class, only half Premium will be awarded.

5. A person who has gained the highest Premium cannot compete again.

6. If the Cottage is occupied by the proprietor, the roof must be in good repair; if the roof is thatch, it must be in good repair, though in the occupation of a tenant. The interior and external conveniences must be clean and orderly—the windows must be free of broken glass, clean, and affording the means of ventilation. Dunghills, and all other nuisances, must be removed from the front and gables. In awarding the Cottage Premiums, preference will be given to Competitors who, in addition to the above requisites, have displayed the greatest taste in ornamenting the exterior of their houses, and the ground in front and at the gables.

7. In estimating the claims for the Garden Premiums, the judges should have in view—The sufficiency and neatness of the fences and walks; the cleanness of the ground; the quality and choice of the crops; and the general productiveness of the garden.

8. Reports, stating the number of Competitors, the names of successful parties, and the nature of the exertions which have been made by them, must be transmitted by the Conveners to the Secretary *on or before the 1st November next*.

9. When a grant has expired, the District cannot apply again for aid for two years.

Parishes desirous of these Premiums must lodge applications with the Secretary *on or before the 1st November next*.

SECTION 2.—MEDALS FOR COTTAGES AND GARDENS OR GARDEN PRODUCE.

The Society will issue annually two Minor Silver Medals to a limited number of local Associations or individuals, who at their own expense establish Premiums for Cottages or Gardens under £15 of Rent. The Medals may be awarded for best kept Cottage, and best kept Garden or Flower Pot, or Garden Produce.

Local Associations or individuals desirous of these Medals, must lodge applications with the Secretary *on or before the 1st November next.*

The Premiums granted previous to 1887 are for five years; those granted in 1887 are for two years.

Argyllshire.

1. TIGHNABRUACH HORTICULTURAL SOCIETY.—*Convener*, Robert Duncan, Royal Hotel, Tighnabruach; *Secretary*, Robert M. Ferrie, Royal Bank, Tighnabruach. Granted 1887.

Ayrshire.

2. CARRICK HORTICULTURAL SOCIETY.—*Convener*, Thomas Smith, The Castle, Maybole; *Secretary*, Robert Halliburton, Commercial Bank, Maybole. Granted 1885.
3. DAILY HORTICULTURAL SOCIETY.—*Convener*, David Baxter, Ladyburn, Maybole; *Secretary*, Dr Shaw, Dailly, Maybole. Granted 1885.
4. LOUDOUN HORTICULTURAL SOCIETY.—*Convener*, Robert Mackie, Draffen House, Stewarton; *Secretary*, George Neil, Greenhead Street, Newmilns, Kilmarnock. Granted 1883.

Dumfriesshire.

5. KIRKPATRICK-FLEMING HORTICULTURAL SOCIETY.—*Convener*, Col. J. G. Graham of Wyseby, Ecclefechan; *Secretary*, John B. Leslie, Mossknow, Ecclefechan. Granted 1885.

Edinburghshire.

6. RATHO HORTICULTURAL SOCIETY.—*Convener*, John Usher of Norton, Ratho; *Secretary*, James Garden, 22 Scotland Street, Edinburgh, Granted 1886.

Fifehire.

7. STRATHMIGLO AND DISTRICT HORTICULTURAL SOCIETY.—*Convener*, Alexander Troup, Strathmiglo; *Secretary*, John Carmichael, Skene Street, Strathmiglo. Granted 1883.

Haddingtonshire.

8. PENCAITLAND HORTICULTURAL SOCIETY.—*Convener*, Wm. Stodart, Wintonhill, Tranent; *Secretary*, Peter Cossar, Pencaitland. Granted 1883.
9. SALTON HORTICULTURAL SOCIETY.—*Convener*, John Fletcher of Salton, Pencaitland; *Secretary*, James Cameron, Salton Hall, Pencaitland. Granted 1887.

Inverness and Nairnshires.

10. CROY AND PETTY HORTICULTURAL SOCIETY.—*Convener*, Duncan Forbes of Culloden, Inverness; *Secretary*, John Marr, Hillhead. Petty, Fort George Station. Granted 1886.

Stewartry of Kirkcudbright.

11. KIRKPATRICK-DURHAM HORTICULTURAL SOCIETY.—*Convener*, James M'Queen of Crofts, Dalbeattie; *Secretary*, James G. Clingan, Kirkpatrick-Durham, Dalbeattie. Granted 1886.

Lanarkshire.

12. BIGGAR HORTICULTURAL SOCIETY.—*Convener*, J. L. Murray of Heavyside, Biggar; *Secretary*, Andrew Smail, Biggar. Granted 1883.
13. BLANTYRE HORTICULTURAL SOCIETY.—*Convener*, John Craig of Bellsfield, Blantyre; *Secretary*, Arthur Gray, Stonefield, Blantyre. Granted 1884. (In abeyance in 1886.)
14. EAST KILBRIDE HORTICULTURAL SOCIETY.—*Convener*, Arthur Gilmour, Crosshill, East Kilbride; *Secretary*, George S. Auchincloss, East Kilbride. Granted 1885.
15. LAW FLORAL AND HORTICULTURAL SOCIETY.—*Convener*, Sir W. C. Anstruther, Bart., Carmichael House, Thankerton; *Secretary*, John Greenhorn, Law Junction, Carlisle. Granted 1884.
16. RUTHERGLEN VICTORIA GARDENS ASSOCIATION.—*Convener*, Col. F. Robertson Reid of Gallowflat, Rutherglen; *Secretary*, John Gordon, jun., 49 Main Street, Rutherglen. Granted 1884.
17. RUTHERGLEN HORTICULTURAL AND APIARIAN SOCIETY.—*Convener*, James Hunter, Coplawhill, Glasgow; *Secretary*, Eben. M'Nally, 90 Main Street, Rutherglen. Granted 1886.
18. STONEHOUSE HORTICULTURAL SOCIETY.—*Convener*, Thomas Tennant of Priestgill, Strathaven; *Secretary*, Archibald Brown, 6 Queen Street, Stonehouse. Granted 1886.

Linlithgowshire.

19. ABERCORN HORTICULTURAL SOCIETY.—*Convener*, Colonel Hare of Calder Hall; *Secretary*, D. Miller, Station House, Winchburgh. Granted 1884.

Nairnshire.

20. CAWDOR HORTICULTURAL AND INDUSTRIAL SOCIETY.—*Convener*, Robert Fraser, Brackla, Nairn; *Secretary*, John M'Arthur, Broomhill, Cawdor, Nairn. Granted 1884.

Perthshire.

21. ALMOND VALLEY HORTICULTURAL SOCIETY.—*Convener*, J. D. Lumsden, Pitcairnfield, Perth; *Secretary*, William Robertson, Huntingtowerfield, Perth. Granted 1884.
22. CAPUTH.—*Convener*, Sir Alex. M. Mackenzie of Delvine, Bart., Dunkeld; *Secretary*, R. Miller, Spittalfields, Caputh, Dunkeld. Granted 1883. (In abeyance in 1885 and 1886.)
23. COUPAR-ANGUS HORTICULTURAL SOCIETY.—*Convener*, Thomas Ferguson, Kinochtry, Coupar-Angus; *Secretary*, T. B. Farquharson, Rosebank, Coupar-Angus. Granted 1884.

24. MENZIES FLOWER SHOW.—*Convener*, Sir Robert Menzies of Menzies, Bart.; *Secretary*, J. Stevens, Weem, Aberfeldy. Granted 1887.

Renfrewshire.

25. KILBARCHAN HORTICULTURAL SOCIETY.—*Convener*, Robert Wilson, Manswrae, Kilbarchan; *Secretary*, James Inglis, Gateside Place, Kilbarchan. Granted 1886.
26. RENFREW HORTICULTURAL SOCIETY.—*Convener*, William Herron, Renfrew; *Secretary*, George Douglas, 31 Ferry Road, Renfrew. Granted 1883.

Stirlingshire.

27. CAMELON HORTICULTURAL SOCIETY.—*Convener*, Ralph Stark of Sommerford, Camelon, Falkirk; *Secretary*, William A. Burns, Cemetery Road, Camelon, Falkirk. Granted 1885.
28. CAMPSIE HORTICULTURAL SOCIETY.—*Convener*, Lt.-Col. C. M. King, Antermony House, Milton of Campsie; *Secretary*, A. S. Hunter, Campsie. Granted 1887.

Sutherlandshire.

29. GOLSPIE HORTICULTURAL SOCIETY.—*Convener*, J. B. Dudgeon, Crakaig, Golspie; *Secretary*, Andrew Lindsay, Golspie. Granted 1883.

REGULATIONS.

1. Competitions may take place in the different districts for Cottages and Gardens, or for either separately.
2. The annual value of each Cottage, with the ground occupied in the parish by a Competitor, must not exceed £15.
3. If Competition takes place for Garden Produce in place of the best kept Garden, such produce must be *bona fide* grown in the Exhibitor's Garden, and he will not be allowed to make up a collection from any other Garden.
4. To warrant the award of the Medals, there must not be fewer than three Competitors.
5. Blank reports will be furnished to the Conveners and Secretaries of the different Districts. These must, in all details, be completed and lodged with the Secretary *on or before the 1st November next*, for the approval of the Directors, against whose decisions there shall be no appeal.
6. When a grant has expired, the District cannot apply again for aid for two years.

SECTION 3.—IMPROVING EXISTING COTTAGES.

To the Proprietor in Scotland who shall report the Improvement of the greatest number of Cottages during the years 1883, 1884, and 1885—The Gold Medal.

SECTION 4.—BUILDING NEW COTTAGES.

To the Proprietor in Scotland who shall report the Erection of the greatest number of approved Cottages during the years 1882, 1883, 1884, and 1885—The Gold Medal.

RULES OF COMPETITION.

1. Claims for the Premiums Nos. 3 and 4 must be lodged with the Secretary on or before the 1st of October next, to allow an inspection to be made of the different Cottages. The inspection will be conducted by a Committee of the Society's Members, and Reports must be transmitted to the Secretary *on or before the 1st November next.*

2. The annual value of the Cottage or Cottages separately, with the garden ground, must not exceed £5.

3. In estimating the claims of the Competitors, the following points will be kept in view:—The external appearance of the Cottages; their internal accommodation; the arrangements of the out-houses; the means of drainage and ventilation; and the expense of the building or of the alteration, compared with its durability and accommodation. When the Cottages of one Competitor are superior in style and comfort to those of another, though not so numerous, the Inspectors will give them preference, provided they amount at least to three, and have been erected at a moderate expense.

4. Parties competing will forward to the Society Plans, Specifications, and Estimates, of which, and of all information sent therewith, copies may be taken for publication, if the Society shall see fit, and the originals returned to the parties within six months, if desired.

HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

GENERAL SHOW OF STOCK AND IMPLEMENTS

AT

PERTH,

ON 26TH, 27TH, 28TH, AND 29TH JULY 1887.

LAST DAYS OF ENTRY.

Implements and other Articles—Friday, 13th May.

Stock, Poultry, and Butter—Friday, 10th June.

No Entry received later than those posted on Friday night,
10th June.

Covered Booths for Offices—Friday, 10th June.

President of the Society.

HIS GRACE THE DUKE OF ATHOLE, K.T., Blair Castle,
Blair Athole.

Convener of the Local Committee.

THE RIGHT HON. VISCOUNT STORMONT, Scone Palace, Perth.

The District connected with the Show comprises the Eastern Division of
Perthshire, Western Division of Forfarshire, Fifeshire, and Kinross-shire.

REGULATIONS.

GENERAL CONDITIONS.

1. The Competition is open to Exhibitors from all parts of the United Kingdom.

2. Every Lot must be intimated by a Certificate of Entry, lodged with the Secretary *not later than the 13th May for Implements and other Articles, and 10th June for Stock, Poultry, and Butter.* No Entry can be received later than those posted on Friday night, 10th June. Printed forms will be issued on application to the Secretary, No 3 George IV. Bridge, Edinburgh. Admission Orders will be forwarded to Exhibitors, by post, previous to the Show.

3. Protests against the awards of the Judges, or against a violation of the judging regulations, must be lodged with the Secretary not later than 9 A.M. on Wednesday, 27th July, and parties must be in attendance at the Committee Room, in the Showyard, at 9.30 A.M. that day, when protests will be disposed of. All protests must be accompanied by the deposit of £2, 2s., and if not sustained the sum will be forfeited at the discretion of the Board.

4. Protests lodged for causes which the protestor produces no good evidence to substantiate, will render him liable to be reported to the Board of Directors, with the view, if they see reason, of his being prohibited from again entering Stock for a General Show.

5. The Society shall not be liable for any loss or damage which Stock, Poultry, Implements, or other articles may sustain at the Show, or in transit.

6. The decisions of the Board of Directors are final in all questions respecting Premiums and all other matters connected with the Show, and

it shall not be competent for any Exhibitor to appeal against such decisions to, nor seek redress in respect of them from, any other tribunal.

7. Covered Booths for Offices (9 feet by 9 feet), purely for business, not for exhibition of goods, can be had for £3, 10s. to Members and £5 to Non-Members. Intimation to be made to the Secretary on or before the 10th of June.

8. No lights allowed in the Yard at night, and Smoking is strictly prohibited within the sheds. Those infringing this rule will be fined 10s.

9. As the command of water in the Yard is limited, it is particularly requested that waste be avoided.

10. When the ground requires to be broken, the turf must be carefully lifted and laid aside, and the surface must be restored to the satisfaction of the Society, and at the expense of the Exhibitor.

11. All persons admitted into the Showyard shall be subject to the Rules and Orders of the Directors.

12. The Stewards have power to enforce the Regulations of the Society in their different departments, and to bring to the notice of the Directors any infringement thereof.

13. All persons in charge of Stock or other Exhibits shall be subject to the orders of the Stewards.

14. The violation by an Exhibitor of any one of the Regulations will involve the forfeiture of all Premiums awarded to him, or of such a portion as the Directors may ordain.

15. Railway Passes for unsold Stock and Implements must be applied for at the Committee Room in the Yard between 9 and 11 o'clock on the forenoon of Thursday and Friday.

16. The Show terminates at 5 P.M. on Friday, 29th July, and no animal or article can be withdrawn before that hour. Steam Engines not till 6 o'clock. Stock and Implements may remain in the Yard till Saturday afternoon.

17. The Premiums awarded will be paid in November 1887, and, with the exception of the Tweeddale Gold Medal and the Silver Medals, may be taken either in money or in plate.

STOCK AND POULTRY.

18. Poultry and Stock will be admitted on Monday, 25th July, and, with the exception of Horses, must be in the Yard before 12 o'clock that night. Horses must be in before 8 o'clock on the morning of Tuesday. Judging to commence at 10 A.M. on Tuesday, 26th July. Exhibited on Tuesday, Wednesday, Thursday, and Friday, 26th, 27th, 28th, and 29th July. Stock may be admitted on Saturday the 23rd July, but only by sending information to the Secretary before the 16th July.

19. All former prize animals are eligible to compete.

20. All animals, except calves and foals shown with their dams, must be entered in the sections applicable to their ages, and cannot be withdrawn after entry. Intention to compete for Family Groups must be notified at the time the other entries are made.

21. No animal to be allowed to compete in more than one section, except for Jumping; and also for the Family Group prizes, animals for which must be drafted from the regular classes, and the numbers of the animals constituting the family group must be handed to the Steward before the animals are brought out for judging.

22. Shorthorn, Aberdeen-Angus, and Galloway animals must be entered in the herd books, or the Exhibitor must produce evidence that his animal is eligible to be entered therein.

23. Stock must be *bona fide* the property and in the possession of the Exhibitor on the last day of Entry, except where otherwise allowed in the Family Group prizes.

24. The Schedule of Entry must be filled up so far as within the knowledge of the Exhibitor.

25. The name of the Breeder, if known, must be given, and if the Breeder is not known, a declaration to that effect, signed by the Exhibitor, must be sent along with the Schedule, and no pedigree will be entered in the Catalogue when the Breeder is unknown.

26. Should it be proved to the satisfaction of the Directors that an animal has been entered under a false name, pedigree, or description, for the purpose of misleading the Directors or Judges as to its qualification or properties, the case shall be reported to the first General Meeting, in order that the Exhibitor shall be disqualified from again competing at the Society's Shows, and his name, if he be a member, struck from the roll, or his case otherwise disposed of as the Directors may determine.

27. When an animal has previously been disqualified by the decision of any Agricultural Association in Great Britain or Ireland, such disqualification shall attach, if the Exhibitor, being aware of the disqualification, fail to state it, and the grounds thereof, in his entry, to enable the Directors to judge of its validity.

28. Breeding Stock must not be shown in an improper state of fatness, and the Judges are requested not to award Premiums to overfed animals.

29. No animal when before the Judges shall bear on its rug, harness, or other fittings, any initial, crest, or mark of ownership, nor be distinguished otherwise than by the number indicating its place in the Catalogue.

30. Horses and Cattle must be paraded when required by the Stewards, and under their direction.

31. Exhibitors shall be answerable for all acts, whether committed by themselves, their servants, or others, and shall be responsible for the condition of their animals during the whole time they remain in the Showyard.

32. No animal to be taken out of its stall after 10 A.M. during the Show except by order of the Stewards, or with permission of the Secretary. Those infringing this Rule will be fined 10s.

33. Aged Bulls and Stallions must have had produce, and, along with Two-year-old Bulls, Three-year-old Colts, and aged Tups, have served within the year of the Show.

34. All Cows must have had calves previous to the Show, and when exhibited they must either be in milk or in calf; if in milk, birth must have been within 9 months of the Show; if in calf, birth must be certified within 9 months after the Show. In the case of Ayrshire Cows in Calf, and Ayrshire Heifers in Calf, calved before 1st January 1885, birth must be certified 9 months after the Show. This Rule does not apply to Animals in Family Groups.

35. Cows in the Family Groups must have had calves previous to the Show, and when exhibited they must be either in milk or in calf. Two-year-old Heifers in the Family Group Prizes to be certified to have been served before the Show, except Highland Heifers, which need not be served till 3 years old.

36. All Milk Cows of the Ayrshire breed must be in the Yard on the evening of Monday, 25th July, before 8 o'clock, after which they will be inspected by the Veterinary Surgeon, or other official of the Society, between 8 and 9 o'clock, to see if they have been milked dry; and if not, they must be milked under his direction, and, after the judging, all Milk Cows must be milked morning and evening.

37. Any artificial contrivance or device of any description found on or proved to have been used on an animal, either for preventing the flow of milk or for any other improper purpose, will disqualify that animal from being awarded a Premium, and the Owner of said animal will be prohibited from again entering stock for any of the Society's General Shows, or for such a period as the Directors may see fit.

38. Two-year-old Heifers—of the Shorthorn, Aberdeen-Angus, and Galloway Breeds—must be in calf when exhibited, and the premiums will be withheld till birth be certified, which must be within 9 months after the Show. This Rule does not apply to Animals in the Family Groups.

39. Animals of any age that have had a calf must be shown as Cows.

40. Mares in Section 5 must have produced foals after 1st January 1887, and foals must be at foot. Mares in Section 6 must be in foal, and awards will be suspended till birth is certified, which must be within 11 months from the date of the Show.

41. With reference to regulations 34 and 38, birth of at least a seven months' calf must be certified; and in regard to regulation 40, birth of at least a nine months' foal.

42. Horses entered as Hunters must be tried over the leaping bar if required by the Judges.

43. Judges are particularly requested to satisfy themselves, as far as possible, regarding the soundness of all Horses before awarding the Prizes, and to avoid giving a preference to animals showing symptoms of hereditary diseases. The Judges may consult the Society's Veterinary Surgeon if they deem it expedient. No protests on veterinary grounds will be received.

44. All Ewes must have reared Lambs in 1887; and Ewes of the Black-faced and Cheviot Breeds must be in milk, and have their Lambs at foot.

45. Sheep must have been clipped bare during the season, and the Judges are instructed to examine the fleeces of the Sheep selected for prizes, and to cast those on which they find any of the former fleece.

46. Sows must have reared pigs in 1887 or be in pig; and Pigs must belong to the same litter, and be uncut.

47. In Poultry the Aged Birds must have been hatched previous to, and Cockerels and Pullets in 1887.

48. Bulls must be secured by nose rings, with chains or ropes attached, or with strong halters and double ropes. All cattle must be tied in their stalls.

49. Servants in charge of Stock must bring their own buckets or pails, and a piece of rope to carry their forage.

50. Strong loose boxes will be provided for Stallions and Three, Two, and One year-old entire Colts, and loose boxes for Mares with foals at foot; closed-in stables for all the other horses, and covered accommodation for the whole of the other stock.

51. Straw, hay, grass, and tares will be provided free by the Society during the four days of the Show, and half allowance on Monday; other kinds of food will be supplied at fixed prices in the forage yard. Any servant removing bedding from an adjoining stall will be fined in double the amount taken. Exhibitors may fetch their own cake or corn to the Yard, but not grass, tares, hay, nor straw. Coops, food, and attendance for Poultry will be found by the Society.

52. Cattle, Sheep, Swine, or Poultry cannot be removed from the Yard till 5 P.M. on Friday, 29th July, except on certificate by the Veterinary Surgeon employed by the Directors, countersigned by the Steward of the department and the Secretary.

53. Horses may be withdrawn at six o'clock each evening on a deposit of £5 for each animal, which shall be forfeited, along with any prize money it may have gained, if the animal is not brought back. They must return between half-past seven and 8 o'clock the following morning, and those not in before eight will forfeit 10s. Horse passes to be applied for at the Committee Room between 5 and 6 P.M. on Tuesday, and the deposit will be returned between 12.30 and 2.30 on Friday.

54. When the Stock is leaving the Yard, no animal is to be moved till ordered by those in charge of clearing the Yard. Those transgressing this Rule will be detained till all the other Stock is removed, and fined 10s.

JUDGING STOCK AND POULTRY.

55. On Tuesday, 26th July, no person will be admitted, except Servants in charge of Stock, till 8 A.M., when the Gates are opened to the public.

56. The Judges will commence their inspection at 10 A.M. The space reserved for the Judges will be enclosed by ropes, and no encroachment will be permitted. In no case shall a Premium be awarded unless the Judges deem the animals to have sufficient merit; and where only one or two lots are presented in a section, and the Judges consider them unworthy of the premiums offered, it shall be in their power to award a lower prize, or to suggest the removal of any lot which appears to them unworthy of being placed in the Yard.

57. In addition to the Premiums, the Judges are authorised to award three Commendations in each section (except Poultry, where only two prizes are to be awarded), if the entries are numerous and the animals of sufficient merit. These Commendations to consist of:—Very Highly Commended, Highly Commended, and Commended.

58. The animals in Section 10 (Ayrshire Breed) which have not calved before the Show, will be judged along with the Cows and Heifers in Calf, and those in Section 11 which have calved before the Show will be judged along with Cows in Milk.

59. Two Members of Committee and a Director will attend each section of the Judges. It will be their duty to see that no obstruction is offered to them, and that the space reserved for them is not encroached on; to ticket the prize animals; to assist the Judges in completing their reports; and should any difficulty arise to communicate with the Stewards.

60. It shall not be competent for any Exhibitor, nor for his Factor or Land-Steward, to act as a Judge or attending Member in any class in which he is competing.

BUTTER.

61. Butter will be received in the Showyard on Monday, 25th July, and till 8 A.M. on Tuesday, 26th July. Judged at 10 A.M. on Tuesday. Exhibited Tuesday, Wednesday, Thursday, and Friday, 26th, 27th, 28th, and 29th July.

62. Butter must have been made on the Exhibitor's farm in 1887. Only one lot of each variety is allowed from the same farm. At least 1 cwt. of the variety of Butter exhibited must have been made during the Season. No lot can be removed from the Yard till 5 P.M. on Friday, 29th July.

STALL RENT.

63. The following rates shall be paid by Exhibitors when making their Entries:—

	Members.		Non-Members.	
	s.	d.	s.	d.
Cattle, each,	15	0	25	0
Horse boxes for Stallions—3, 2, and 1 year-old entire Colts, and Mares with Foals at foot,	30	0	40	0
Stallions, 12 hands and under,	15	0	20	0
Mares or Geldings, 12 hands and under,	10	0	15	0
All other Horses, each,	20	0	30	0
Sheep, per pen,	10	0	15	0
Swine, per pen,	15	0	20	0
Poultry, each entry,	3	0	5	0
Butter, each entry,	4	0	6	0
Covered Booths for offices, 9 feet by 9 feet,	70	0	100	0
Newspaper offices,	£2, 10 s.			

IMPLEMENTS AND OTHER ARTICLES.

64. Implements will be received in the Yard on Tuesday, 19th July, and till 5 o'clock on the afternoon of Monday, 25th July. Exhibited Tuesday, Wednesday, Thursday, and Friday, 26th, 27th, 28th, and 29th July. The Schedule of Entry must be filled up so far as within the knowledge of the Exhibitor, and prices must be stated.

65. No Money Prizes or Medals will be given for implements of any kind, and no inspection of them by Judges will take place, except those specified at page 16.

66. Agricultural Implements, and Implements and collections of articles not Agricultural, will be received for Exhibition, but the Secretary will be entitled to refuse Entries from dealers in articles not deemed worthy of Exhibition.

67. Implements will be placed in the following sections, viz.:—1st, Under Cover, for Agricultural Implements: 2nd, Open, for Agricultural Implements: 3rd, Exhibits not Implements of Husbandry, which will be placed apart from the Agricultural Implements, either under cover or open, as may be deemed necessary by the Secretary; 4th, Motion Yard; 5th, Open space for Agricultural Implements from local country operative Blacksmiths and Carpenters. See below*. Exhibitors must specify the space they require.

68. The articles of each Exhibitor must be all placed in one stand, except implements in motion, and must not on any account extend beyond the width allowed. No article to be moved out of its stand, or the stand dismantled, till the termination of the Show, at 5 P.M., on Friday, 29th July. Those infringing this rule will be fined 10s.

69. Exhibitors must arrange their own articles *within* the space allotted to them before 9 o'clock on Tuesday the 26th July, and to the satisfaction of the Stewards in charge of the Implement Yard.

70. All Machines requiring steam or fire must be entered as such in the Certificate; and will be placed in the Motion Yard. *Coke or anthracite Coal must be used in all cases where fire is required.*

71. No Steam Engine shall be driven in the Yard at a greater speed than 4 miles an hour.

72. Locomotive and Traction Engines and other Machines must not be moved from their places without permission of the Stewards and must not leave their stands till 6 P.M. on Friday.

73. There must be attached to each Implement, when forwarded to the Show, a label bearing the Exhibitor's name, and that of the implement.

74. The carriage of all Implements must be prepaid.

STALL RENT.

75. Ground to be taken in spaces of 10 feet frontage by 20 feet deep, except in Motion Yard, which is to be 10 feet or any larger amount of frontage by 50 feet deep. Except for exhibits not agricultural, no boarding shall exceed 4 feet in height.

76. The following rates shall be paid by Exhibitors when making their Entries:—

	Members.	Non-Members.
Implement Shedding, 20 feet deep, 9 feet high, per 10 feet,	£1 10 0	£2 0 0
Implements without Shedding, 20 feet deep, per 10 feet,	1 10 0	2 0 0
Implement space in Motion Yard, without Shedding, 50 feet deep, per foot,	0 3 0	0 4 0
And with Shedding, 20 feet deep, 12 feet high, per foot,	0 6 6	0 8 6
Covered Booths for offices, 9 feet by 9 feet each,	3 10 0	5 0 0
Newspaper offices, each,	£2 10s.	

* In order to encourage exhibits of Agricultural Implements from local country operative Blacksmiths and Carpenters, open space will be provided for these in some less prominent part of the Yard at a charge of Entry Money of 1s. per running foot of frontage, 20 feet deep.

ADMISSION TO YARD.

The Public will be admitted on Tuesday, 26th July, at 8 A.M. The inspection by the Judges commences at 10 A.M. The charges will be—Tuesday, from 8 A.M. till 5 P.M., 5s.; Wednesday, from 8 A.M. till 5 P.M., 3s.; Thursday, from 8 A.M. till 5 P.M., 1s.; Friday, from 8 A.M. till 5 P.M., 1s.

Members of the Society are admitted to the Showyard without payment, on exhibiting a "*Member's Ticket*," which is strictly not transferable. Tickets will be sent to all members residing in the United Kingdom whose addresses are known, and on no account will duplicates be issued. All Members not producing their tickets must pay at the gate, and the admission money will not be returned.

Exhibitors of Stock (not Members) are admitted free on producing their tickets.

Exhibitors of Implements (not Members) and their attendants will be entitled to free entry during the Show, but must remain at their stalls during the judging of the Stock on Tuesday.

Tickets for attendants on Stock and Implements are not available to admit to the Yard between 11 A.M. and 5 P.M.; and any attendant requiring to leave the Yard during the day, cannot be again admitted except by a special pass (to be applied for at the Ticket Gate), which must be given up on his return.

Placards, except those of the Society, are prohibited both inside the Showyard and on the outside of the Boundary Fence, with the exception of those belonging to Exhibitors, whose right is confined to their own stalls. No newspapers or any other article allowed to be carried about the Yard for sale or display. No strolling bands or musicians admitted.

No Carriages or Equestrians admitted without special leave from the Directors, and then only for Invalids. Bath chairs may be brought in.

Premium Lists, Regulations, and Certificates of Entry may be obtained by applying at the Secretary's Office, No. 3 George IV. Bridge, Edinburgh.

All Communications should be addressed to FLETCHER NORTON MENZIES, Esq., Secretary of the Highland and Agricultural Society of Scotland, No. 3 George IV. Bridge, Edinburgh.

LAST DAYS OF ENTRY.

IMPLEMENTS AND OTHER ARTICLES—Friday, 13th May.

STOCK, POULTRY, AND BUTTER—Friday, 10th June.

No Entry received later than those posted on Friday night¹ 10th June.

COVERED BOOTHS FOR OFFICES—Friday, 10th June.

RAILWAY ARRANGEMENTS.

The Railway Companies will be furnished with a list of the Exhibitors of Stock, after the 1st of July, and all applications for horse-boxes and trucks, and for information as to arrangements of Special Trains, must be made by the Exhibitors themselves with the Station-master where their stock is to be trucked.

The Scotch Railway Companies have adopted the following Regulations:—

BY PASSENGER TRAIN.

1. Live Stock *to* the Show to be charged ordinary rates.
2. Live Stock *from* the Show, *if sold*, to be charged ordinary rates.
3. Live Stock *from* the Show, *if unsold*, to be conveyed at half rates back to the station whence they were sent, on production of a certificate from the Secretary of the Agricultural Show to the effect that they are really unsold; failing production of such certificate, ordinary rates must be charged. The reduction to half rate is to be allowed only when the animals are returned by the same route as that by which they were conveyed to the Show.

If the unsold Live Stock which was conveyed on the outward journey by Goods Train in cattle trucks be required to be returned by Passenger Train in horse-boxes, half the Passenger Train rates must be charged.

4. HORSES.—By Passenger or Special Train.
 - (a) A Stallion to be charged the rate for one Horse, plus 50 per cent.
 - (b) Any other Horse, for which the exclusive use of a horse-box is *ordered*, to be charged the rate for one horse, plus 50 per cent.
 - (c) Other Horses to be charged at ordinary rates.
5. BULLS, COWS, AND OTHER ANIMALS—
 - (a) A Bull, Cow, or other Animal sent in a horse-box, and for which the exclusive use of the box *has been ordered*, to be charged the rate for three Horses. (Great North of Scotland Railway, plus 25 per cent.)
 - (b) Bulls, Cows, or other animals sent in horse-boxes, but for which the exclusive use of the box *has not been ordered*, to be charged each the rate for one Horse, plus 50 per cent. (Great North of Scotland Railway, plus 25 per cent.)
6. Unsold Live Stock transferred from one Agricultural Show to another, in another part of the country, must be charged ordinary rates.
7. POULTRY.—The Companies give notice that they are not common carriers of poultry; they will, however, to accommodate the public, carry such by special agreement only, and at special rates, to be obtained at the Companies' stations.
8. Provender conveyed to Agricultural Shows with Live Stock is to be charged ordinary rates, except so much of the same as may be required on the journey.
9. Dogs to be charged full rates both ways.
10. All the above to be carried at owners' risk.
11. Collection and delivery to be performed in all cases by the owners.
12. Men, certified by the owners to be *bona fide* in charge of Live Stock to be conveyed free in the same train as the animals, as follows:—
One man for each consignment, except when the consignment requires more than one vehicle, when one man for each vehicle may be sent free.

NOTE.—*Upon both the outward and homeward journey a separate certificate must be given, which must be retained by the station-master at the outward or homeward starting-point, as the case may be.*

13. For men in charge of Horses or other Live Stock forwarded by Passenger Train, no separate pass must be issued; the only form of pass must be the endorsement of the station clerk written across the horse

ticket, which must be delivered up on the arrival of the animals at their destination.

BY GOODS TRAIN.

Live Stock.

1. Live Stock to the Show to be charged ordinary rates.
2. Live Stock from the Show, if sold, to be charged ordinary rates.
3. Live Stock from the Show, if unsold, to be conveyed at half rates back to the station whence they were sent, on production of a certificate from the Secretary of the Agricultural Show to the effect that they are really unsold; failing production of such certificate, ordinary rates must be charged. The reduction to half rate is to be allowed only when the animals are returned by the same route as that by which they were conveyed to the Show.

If the unsold Live Stock which was conveyed on the outward journey by Passenger Train in horse-boxes be required to be returned by Goods Train in cattle trucks, half the Goods Train rates must be charged.

4. Live Stock rates are "station to station" only.
5. Unsold Live Stock transferred from one Agricultural Show to another, in another part of the country, must be charged ordinary rates.
6. POULTRY.—The Companies give notice that they are not common carriers of Poultry. They will, however, to accommodate the public, carry such by special agreement only, and at special rates, to be obtained at the Companies' stations.
7. Horse-boxes must not be provided for the carriage of Live Stock sent by Goods Train and invoiced at Goods Train rates.
8. Provender conveyed to Agricultural Shows with Live Stock is to be charged ordinary rates, except so much of the same as may be required on the journey.
9. Men, certified by the owners to be *bona fide* in charge of Live Stock, to be conveyed free in the same train as the animals; the number not to exceed one man to each vehicle.

NOTE.—Upon both the outward and homeward journey a separate certificate must be given, which must be retained by the station-master at the outward or homeward starting-point as the case may be.

10. For men in charge of Live Stock forwarded by Goods Train, no separate pass must be issued, but the form of pass must be printed on the Live Stock Ticket, which must be delivered up on the arrival of the Live Stock at their destination.

Agricultural Machines and Implements.

The application of the following Regulations for the conveyance of Agricultural Implements should not be extended to articles other than Implements of husbandry. (The Great North of Scotland decline to agree to this):—

11. Agricultural Machines and Implements to the Show to be charged ordinary rates.
12. Agricultural Machines and Implements from the Show, if sold, to be charged ordinary rates.
13. Agricultural Machines and Implements from the Show, if unsold, to be conveyed at half rates back to the station whence they were sent, on production of a certificate from the Secretary of the Agricultural Show to the effect that they are really unsold; failing production of such certificate, ordinary rates must be charged. The reduction to half rate is to be allowed only when the articles are returned by the same route as that by which they were conveyed to the Show.
14. Unsold goods transferred from one Agricultural Show to another, in another part of the country, must be charged ordinary rates.
15. Agricultural Societies' Show Plant must be charged at Special Class rates, station to station.
16. All the above to be carried at owners' risk.
17. Collection and delivery to be performed in all cases by the owners.

PREMIUMS.

In addition to the Premiums, the Judges are authorised to award three Commendations in each section (except Poultry, where only two prizes are to be awarded), if the entries are numerous, and the animals of sufficient merit. These Commendations to consist of —Very Highly Commended, Highly Commended, and Commended.

All former prize animals are eligible to compete.

Family groups must be notified at the time the other entries are made, see Class II. Horses, Sections 11 and 12.

CLASS I.—CATTLE.

Section	SHORTHORN.	Premiums.			
		1st.	2d.	3d.	4th.
		£	£	£	£
	Tweeddale Gold Medal for Best Bull, .	20	—	—	—
1.	Bull calved before 1st Jan. 1885, .	20	10	5	—
	Breeder of best Bull,—The Silver Medal.				
2.	Bull calved on or after 1st Jan. 1885, .	20	10	5	—
3.	Bull calved on or after 1st Jan. 1886, .	15	8	4	—
4.	Cow of any age, .	15	8	4	—
5.	Heifer calved on or after 1st Jan. 1885, .	10	5	3	—
6.	Heifer calved on or after 1st Jan. 1886, .	10	5	3	—
					£180
	AYRSHIRE.				
7.	Bull calved before 1st Jan. 1885, .	20	10	5	—
	Breeder of best Bull,—The Silver Medal.				
8.	Bull calved on or after 1st Jan. 1885, .	15	8	5	—
9.	Bull calved on or after 1st Jan. 1886, .	10	5	3	—
10.	Cow in Milk of any age, .	15	8	4	—
11.	Cow in Calf of any age, or Heifer in Calf, calved before 1st Jan. 1885, .	10	5	3	—
12.	Heifer calved on or after 1st Jan. 1885, .	10	5	3	—
13.	Heifer calved on or after 1st Jan. 1886, .	8	5	3	—
					160
	ABERDEEN-ANGUS.				
14.	Bull calved before 1st Dec. 1884, .	20	10	5	—
	Breeder of best Bull,—The Silver Medal.				
15.	Bull calved on or after 1st Dec. 1884, .	20	10	5	—
16.	Bull calved on or after 1st Dec. 1885, .	15	8	4	—
17.	Cow of any age, .	15	8	4	—
18.	Heifer calved on or after 1st Dec. 1884, .	10	5	3	—
19.	Heifer calved on or after 1st Dec. 1885, .	10	5	3	—
					160
	GALLOWAY.				
20.	Bull calved before 1st Jan. 1885, .	20	10	5	—
	Breeder of best Bull,—The Silver Medal.				
21.	Bull calved on or after 1st Jan. 1885, .	20	10	5	—
22.	Bull calved on or after 1st Jan. 1886, .	15	8	4	—
23.	Cow of any age, .	15	8	4	—
24.	Heifer calved on or after 1st Jan. 1885, .	10	5	3	—
25.	Heifer calved on or after 1st Jan. 1886, .	10	5	3	—
					160
	Carry forward, . . . . .	...	...	...	£660

		Brought forward,			£660
		Premiums.			
Section	HIGHLAND.	1st.	2d.	3d.	
		£	£	£	
26.	Bull calved before 1st Jan. 1884.	20	10	5	
	Breeder of best Bull,—The Silver Medal.				
27.	Bull calved on or after 1st Jan. 1884,	20	10	5	
28.	Bull calved on or after 1st Jan. 1885,	15	5	4	
29.	Cow of any age,	15	5	4	
30.	Heifer calved on or after 1st Jan. 1884.	10	5	3	
31.	Heifer calved on or after 1st Jan. 1885.	10	5	3	
					160
					<u>£820</u>

CLASS II.—HORSES.

		Premiums.			
	FOR AGRICULTURAL PURPOSES.	1st.	2d.	3d.	4th.
Section		£	£	£	£
1.	Stallion foaled before 1st Jan. 1884, Breeder of best Stallion,—The Silver Medal.	25	15	10	5
2.	Entire Colt foaled on or after 1st Jan. 1884,	20	15	10	5
3.	Entire Colt foaled on or after 1st Jan. 1885,	20	10	6	3
4.	Entire Colt foaled on or after 1st Jan. 1886,	12	7	4	2
5.	Mare (with Foal at foot) foaled before 1st Jan. 1884,	20	10	5	3
6.	Mare (in Foal) foaled before 1st Jan. 1884,	20	10	5	3
7.	Filly foaled on or after 1st Jan. 1884,	10	6	3	2
8.	Filly foaled on or after 1st Jan. 1885,	10	6	3	2
9.	Filly foaled on or after 1st Jan. 1886,	10	6	3	2
10.	Draught Gelding of any age,	8	4	2	—
11.	Family Group of five animals, male or female, yearlings or two-year olds, the progeny of one Stallion (Geldings excluded). The Entry to be made by the owner of said Stallion, but the five animals need not of necessity belong to him. All must be entered in the regular Sections.	15	10	—	—
12.	Mare and three of her descendants, male or female, in the female line (Geldings excluded), bred by or the property of the Exhibitor. All must be entered in the regular Sections except foals shown with their dams,	15	10	—	—
					372

Carry forward, £372

Brought forward,		...	...	£372
		Premiums.		
		1st.	2d.	3d.
		£	£	£
HUNTERS AND ROADSTERS.				
Section				
13.	Mare or Gelding, suitable for field, foaled before 1st Jan. 1884, .	15	8	4
14.	Mare or Gelding, suitable for field, foaled on or after 1st Jan. 1884, .	15	8	4
15.	Mare or Gelding, suitable for field, foaled on or after 1st Jan. 1885, .	10	5	3
16.	Mare or Gelding, suitable as Hackney, .	8	4	2
17.	Mare or Gelding, suitable for driving, 3 years old and upwards, to be shown in harness and driven, .	10	5	3
18*	Mare or Gelding, for jumping, .	20	10	5
		<hr/>		
		139		
PONIES.				
19.	Stallion, 15 hands and under, .	6	3	1
20.	Mare or Gelding, between 13 and 14½ hands, .	6	3	1
21.	Mare or Gelding, between 12 and 13 hands, .	6	3	1
22.	Mare or Gelding, under 12 hands, .	6	3	1
23.	Shetland Stallion, not exceeding 10½ hands, .	4	2	1
24.	Shetland Mare or Gelding, not exceeding 10½ hands, .	4	2	1
25*	Ponies, 14 hands and under, for jumping, .	5	3	1
		<hr/>		
		63		
		<hr/>		
		£574		
		<hr/>		

* Animals entered in the other Sections may compete for Jumping.

CLASS III.—SHEEP.

		Premiums.			
		1st.	2d.	3d.	
		£	£	£	
BLACKFACED.					
Section					
1.	Tup above one shear,	12	8	4	
2.	Shearling Tup,	12	8	4	
3.	Tup Lamb,	5	2	0	
4.	Three Ewes above one shear, with their Lambs at foot,	10	5	2	
5.	Three Shearling Ewes or Gimmers, . .	10	5	2	
		<hr/>			£89
					<hr/>
		Carry forward,			£89
					<hr/>

GENERAL SHOW AT PERTH IN 1887.

81

Brought forward,		... ..			£89
		Premiums.			
CHEVIOT.		1st.	2d.	3d.	
Section		£	£	£	
6.	Tup above one shear,	12	8	4	
7.	Shearling Tup,	12	8	4	
8.	Three Ewes above one shear, with their Lambs at foot,	10	5	2	
9.	Three Shearling Ewes or Gimmers,	10	5	2	82
<hr/>					
BORDER LEICESTER.					
10.	Tup above one shear,	12	8	4	
11.	Shearling Tup,	12	8	4	
12.	Three Ewes above one shear,	10	5	2	
13.	Three Shearling Ewes or Gimmers,	10	5	2	82
<hr/>					
LONG-WOOLLED OTHER THAN BORDER LEICESTER.					
14.	Tup above one shear,	3	2	—	
15.	Shearling Tup,	3	2	—	
16.	Three Ewes above one shear,	3	2	—	
17.	Three Shearling Ewes or Gimmers,	3	2	—	20
<hr/>					
SHROPSHIRE.					
	Cup for Best Tup,	*10	0	0	
18.	Tup above one shear,	6	4	2	
19.	Shearling Tup,	6	4	2	
20.	Three Ewes above one shear,	5	3	2	
21.	Three Shearling Ewes or Gimmers,	5	3	2	54
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SHORT-WOOLLED OTHER THAN SHROPSHIRE.					
22.	Tup above one shear,	6	4	2	
23.	Shearling Tup,	6	4	2	
24.	Three Ewes above one shear,	5	3	2	
25.	Three Shearling Ewes or Gimmers,	5	3	2	44
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EXTRA SECTIONS.					
26.	Three Blackfaced Wethers, not above four shear,	1st.	2d.		
		4	2		
27.	Three Cheviot Wethers, not above three shear,	4	2		12
<hr/>					£383

* Given by the Shropshire Sheep Breeders' Association and Flock Book Society, for the best Tup in the Shropshire Sheep Classes, the Tup to be bred in Scotland by the exhibitor.

CLASS IV.—SWINE.

Section	LARGE BREED.	Premiums.		
		1st.	2d.	3d.
		£	£	£
1. Boar,		5	3	1
2. Sow,		4	2	1
3. Three Pigs, not above 8 months old,		4	2	1
				£23
	BLACK OR BERKSHIRE.			
4. Boar,		5	3	1
5. Sow,		4	2	1
6. Three Pigs, not above 8 months old,		4	2	1
				23
	MIDDLE WHITE BREED.			
7. Boar,		5	3	1
8. Sow,		4	2	1
9. Three Pigs, not above 8 months old,		4	2	1
				23
				£69

EXTRA STOCK.

Animals not included in the Sections for Competition may be exhibited as Extra Stock, and will receive Honorary Premiums when specially commended, as follows :—

CATTLE AND HORSES.

Very highly commended,	Medium Gold Medal.
Highly commended,	Minor Gold Medal.
Commended,	The Silver Medal.

SHEEP AND SWINE.

Very highly commended,	Minor Gold Medal.
Highly commended,	The Silver Medal.
Commended,	Medium Silver Medal.

CLASS V.—POULTRY.

FIRST PREMIUM—ONE SOVEREIGN; SECOND PREMIUM—TEN SHILLINGS—in all the Sections of Poultry.

Aged Birds must have been hatched previous to, and Cockerels and Pullets in, 1887.

	Section	Section
DORKING— <i>Silver Grey</i> , . . .	1. Cock	2. Hen
	3. Cockerel	4. Pullet
DORKING— <i>Coloured</i> , . . .	5. Cock	6. Hen
	7. Cockerel	8. Pullet
COCHIN-CHINA, . . .	9. Cock	10. Hen
	11. Cockerel	12. Pullet
BRAMAHPOOTRA, . . .	13. Cock	14. Hen
	15. Cockerel	16. Pullet
SPANISH, . . .	17. Cock	18. Hen
	19. Cockerel	20. Pullet
SCOTCH GREY, . . .	21. Cock	22. Hen
	23. Cockerel	24. Pullet
HAMBURG, . . .	25. Cock	26. Hen
	27. Cockerel	28. Pullet
ANY OTHER PURE BREED, . . .	29. Cock	30. Hen
	31. Cockerel	32. Pullet
GAME— <i>Black or Brown</i> } . . .	33. Cock	34. Hen
Reds,	35. Cockerel	36. Pullet
GAME— <i>Any other Pure</i> } . . .	37. Cock	38. Hen
Breed,	39. Cockerel	40. Pullet
BANTAMS— <i>Any Pure</i> } . . .	41. Cock	42. Hen
Breed,	43. Cockerel	44. Pullet
DUCKS— <i>White Aylesbury</i> , . . .	45. Drake	46. Duck
	47. Drake (Young)	48. Duckling
DUCKS— <i>Rouen</i> , . . .	49. Drake	50. Duck
	51. Drake (Young)	52. Duckling
DUCKS— <i>Any other Pure</i> } . . .	53. Drake	54. Duck
Breed,	55. Drake (Young)	56. Duckling
TURKEYS— <i>Any Pure Breed</i> , . . .	57. Cock	58. Hen
	59. Cock (Poult)	60. Hen (Poult)
GEESE— <i>Any Pure Breed</i> , . . .	61. Gander	62. Goose
	63. Gander (Young)	64. Gosling

Amount of Poultry Premiums, £96.

ABSTRACT OF PREMIUMS.

1. Cattle,	£820	0	0
2. Horses,	574	0	0
3. Sheep,	383	0	0
4. Swine,	69	0	0
5. Poultry,	96	0	0
6. Butter,	36	0	0
7. Implements,	27	0	0
8. Highland Industries and Fisheries,	50	0	0
9. Bee Husbandry,	21	8	0
10. Six Silver Medals to Breeders,	4	4	0
11. Extra Stock, say	100	0	0
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	£2190	12	0
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F. N. MENZIES, *Secretary*.

3 GEORGE IV. BRIDGE,
EDINBURGH, 2nd February 1887.

The DIRECTORS are prepared to receive **Queen's Jubilee** or **other Cups** from Societies, or any party offering the same, as **Prizes for Pure-Bred Animals** at the **Perth Show, 1887**.
The value of the Cup not to be less than £20.

Intimation of the Prizes to be made to the Secretary before the 30th April.

**The General Show of Stock and Implements will
be held at Glasgow in 1888.**

APPENDIX (C).

LIST OF MEMBERS

THE HIGHLAND AND AGRICULTURAL
SOCIETY OF SCOTLAND,

1887,

ALPHABETICALLY ARRANGED, AND STATING THE
YEAR OF ADMISSION.

By the Charter of 1834 the Society consists of two classes, Ordinary and Honorary or Corresponding Members. The number of Honorary or Corresponding Members resident in the United Kingdom must not exceed twenty, but with power to the Society to elect as Honorary Associates persons resident abroad, not subjects of Her Majesty, who may have been benefactors to the Society, or who are distinguished for their skill in Art or Science, provided that the number of such Foreign Associates shall not exceed twenty.

By a Bye-Law passed in 1873, with reference to the Supplementary Charter of 1856, successful Candidates for the Society's Agricultural Diploma are thereby eligible to be elected free Life Members of the Society.

Candidates for Ordinary Membership must be proposed by a Member, and are elected at the half-yearly General Meetings, in January and June. It is not necessary that the Member who proposes the Candidate should attend the meeting.

The Ordinary Subscription is £1, 3s. 6d., annually, which may be redeemed by one payment, varying according to the number of previous annual payments, from £7, 1s. to £12, 12s. Proprietors farming the whole of their own land, whose Rental on the Valuation Roll does not exceed £500 per annum, and all Tenant-Farmers, Secretaries or Treasurers of Local Agricultural Associations, Factors Resident on Estate, Land Stewards, Foresters, Agricultural Implement Makers, and Veterinary Surgeons, none of them being also owners of land to an extent exceeding £500 per annum, are admitted on a subscription of 10s. annually, which may be redeemed by one payment, varying according to the number of previous annual payments, from £3 to £5, 5s. Subscription payable on election, and afterwards annually in January.

According to the Charter, a Member who homologates his election by paying his first subscription cannot retire until he has paid, in annual subscriptions, or otherwise, an amount equivalent to a life composition.

Members of the Society receive the *Transactions* on application, and are entitled to apply for District Premiums—to report Ploughing Matches for the Medal—to free admission to the Show-Yard, and to exhibit Stock and Implements at reduced rates. Firms are not admitted as Members, but if one partner of a firm becomes a Member, the firm is allowed to exhibit at Members' rates.

Members having Candidates to propose are requested to send their names to FLETCHER NORTON MENZIE, Esq., No. 3 George IV. Bridge, Edinburgh.

The Members marked * have been Presidents; and † Vice-Presidents.

LIST OF MEMBERS.

His Most Gracious Majesty THE QUEEN
His Royal Highness The PRINCE OF WALES

Admitted
1872
1873

Admitted
1880 Adair E A Ostens, Hurdanger Nor
1882 Adair P M P Light Hon Lord Airthrey
Castle Strathg
1883 ABERCROMBY Sir Robert John of Burk
eab Lut For, Len Tarriff
1884 ADAMFFER Light Hon the Earl of
Hillo House Melthick
1885 Abernethy David W Ferryhill
Loun 13 Aldeen
1886 ADAM Light Hon the Earl Inverlochty
Castle Kinrossie
1887 Adam Alexander 20 Union Terrace
Aberdeen
1888 Adam Eneas Humbleston Dingwall
1889 Adam Charles Elphinstone of Blair
Adam Barr
1890 Adam James Coularibank, Lorne
mouth
1891 Adam John Harvieston Cottage
Dollan
1892 Adam Robert City Chamberlain Edin
burgh
1893 Adam Stephen Wool Merchant 11
Hillside Crescent Edin burgh
1894 Adam Thomas, National Bank Aber
deen
1895 Adam Thomas of Lynceon Bank Agent
Wick
1896 Adam William Lush Banchory Tarnan
1897 Adams James W D Outhlaw 17
1898 Albu John Viewpark Edinburgh
1899 Albu Wm Andrew of Lechnaw Bnt
Strathg
1900 Albu James Hugh Portenallie Strath
g
1901 Albu I Vans f Shuchran and Barn
1902 Albu Whanghill Winton
1903 Albu William Buthweim Strathg
1904 Albu John M on Glasgow
1905 Albu John M on Prince
1906 Albu M St Noble the Virgins of
1907 Albu Anslie Douglas of Delgaty
1908 Albu Duncl of the Gut 48 Moray
1909 Albu David of Axterton Blackshiel
1910 Albu John Fairfield Lornhead
1911 Albu John jun Hillside Lothian
1912 Albu F of Elvingston Glasgow

Admitted
1880 Anslie William Pittfour Minto
1881 Anslie Right Hon the Earl of Col
1882 Anslie James 80 Princes Street
Edinburgh
1883 Anslie James (late Princy Marn,
Dornoch) Australia
1884 Anslie Lieut Col, of Drummore
Mussellburgh
1885 Anslie Peter (late West Garleton
Hall, Fife) America
1886 Anslie William Linhope Hawick
1887 Anslie Dr A P 15 Dubin Street
Edinburgh—*Ch. Hist. the Scotl*
1888 Anslie George Tyrre Kirkcaldy
1889 Anslie George Lewis Bally Kirkcaldy
1890 Anslie James, Fairhaven, Eskbank
Dulkeith
1891 Anslie John sen 15 Crusewayade
Edinburgh
1892 Anslie John Gillespie Southfield Strath
g
1893 Anslie John M Fyfe Lockhart
1894 Anslie Maria Taggart Prestwick
1895 Anslie Robert Drummore Campbel
town
1896 Anslie Robert (late Kilmany) Cupar
1897 Anslie Thomas (late Greenock Crescent
Edinburgh
1898 Anslie Thomas 11 Orwell Place Edin
burgh
1899 Anslie William Roughlands Lan
g
1900 Anslie John Bank of Scotland Elgin
1901 Alexander 15 16 Clark Street
1902 Alexander George Elton Lilliesleaf
1903 Alexander George South Balnook,
Huntly
1904 Alexander James of Balmule Dun
1905 Alexander James 140 North Street
1906 Alexander James Inch of Ferryton
1907 Alexander John 9 Raymond Terrace
1908 Alexander John Ballindry Kilmun
1909 Alexander P D Royal Surveys
1910 Alexander of Weir

Admitted

- 1863 Alson, James M, General Merchant,
Beaully
1861 Allan Alexander, of Aros, Tobermory
1864 Allan, Alexander, Waddiefield, Hamil-
ton
1867 Allan, Andrew, Munnoch, Dalry,
Ayrshire
1864 Allan, David, M R C V S, Clackston,
Bnsby
1863 Allan, Gavin, Whitelee Hill, High Hap-
ton, Newmilns
1864 Allan, James, Corn Merchant, Bo'ness
1875 Allan, James, jun, Bo'ness
1861 Allan, James, Clifton, Mid-Caldor
1875 Allan, James, Clachlands, Lamlash
1870 Allan, James, jun, Balmacoolie, Brodick
1877 Allan, James, Kirklands, Dolphinton
1864 Allan, John, Pettwals, Ayrton
1873 Allan, John, Redheugh, Cockburns-
path
1875 Allan, John, Culthull, Dunkeld
1875 Allan, Robert, Glenmore, Kilmelford,
Lochgamphead
1863 Allan, Robert A., Allan Bank, Eye-
mouth
1862 Allan, T. W. Murray, of Glenfeochan,
Oban
1863 Allan, William, Canonhill, Thornhill
1874 Allan, William, Cluny, Grantown
1870 Allan, William, Drummondloch, Fer-
rintosh, Canon Bridge
1871 Allan, William, Park, Clackmannan
1864 Allison, Wm, Clearbank, Strathro,
Brechin
1863 Alston, David, Crosslee, Gairshiels
1863 Alston, George, Loudoun Hill, Dalvel
1860 Alston, John P., of Muirburn, Strath
aven
1861 Amour, John, Farmer and Dairyman,
Cramond Bridge
1877 Anderson, Colonel, of Bourhouse, Dun-
bar
1863 ANDERSON, Sir Alexander, Aberdeen
1874 Anderson, Alexander, Berryhill, Dundee
1863 Anderson, Alexander, Kippenross, Dun-
blane
1879 Anderson, Archibald Turnbull, Perth
1873 Anderson, Arthur, M D, C B, sunny
brae, Pitlochry
1866 Anderson, B T G, of Tushielaw, Sel-
kirk
1877 Anderson, Charles, jun North British
Agriculturist, 377 High Street, Edin-
burgh
1876 Anderson, Charles, Barsalloch, Port
William
1864 Anderson, Charles, Royal Bank, Jed-
burgh
1875 Anderson, Charles, Fittylkil Leslie
1877 Anderson, David, Cassendilly, Cupar
Fife
1863 Anderson, David A., of St Fink and
Burnside, Blurgowie
1864 Anderson, David, Woodhill, Car-
noustie
1862 Anderson, George of Woodhouse, Eccle-
fechan
1863 Anderson, George, of Hawthorn Bank,
Selkirk
1865 Anderson, George, West Fingask, Old
Veldrum
1869 Anderson, George D, Melk Pinkerton,
Dunbar
1864 Anderson, Gilbert, Hullwick Lerwick
1873 Anderson, James, Bradbury, Enville,
Stoubridge
1864 Anderson, James, jun, Mains of Park-
hill, Arbroath
1863 Anderson, James, Westside, Brechin
1865 Anderson, James, Schector, Inverness

Admitted

- 1873 Anderson, James, Inverchaggonne,
Glanlarich, Stirling
1863 Anderson, James M, S S C, 1 Black-
ford Road, Edinburgh
1873 Anderson, John, Camalt, Coppercleuch,
Selkirk
1867 Anderson, John, Craigton, Banochry
1866 Anderson, John, Hill of Wester Coull,
Tarlund
1867 Anderson, John, 14 Dean Terrace, Edin-
burgh
1869 Anderson, John, Dullatur, Cumber-
nauld
1873 Anderson, John, Melkims, Alexandria,
N B
1879 Anderson, John, Royal Hotel, Blan-
gowrie
1871 Anderson, John A, St Albans, Perth
1876 Anderson, John M, Huntly
1864 Anderson, J R, W S, 52 Palmerston
Place, Edinburgh
1870 Anderson, John, late Dalhousie Mains,
Dilkeith
1864 Anderson, Peter, Callanders House
Whitton
1878 Anderson, Peter, Duncaves Fortin, all
1870 Anderson, Robert, Alleyford, Kirkun-
zeon, Dumfries
1868 Anderson, Robert, of Lochiln, Ayr
1871 Anderson, Robert, Middlebank, Edin-
1873 Anderson, Robert, Donnaheuch, Fess,
Pitlochry
1861 Anderson, Robert, Princes Street, Stu-
ling
1861 Anderson, Robert, Wester Coull, Tu-
rind
1864 Anderson, Robert, Viewfield Elgin
1861 Anderson, Robert H, Lyme House, Lynn
Beggs
1860 Anderson, Robert Hood, Devonshire
Club, London
1864 Anderson, R K, 145 Queen Victoria
Street, London
1876 Anderson, E Lang, Bor Parkhill Tea
Estate, Biswanth, Assam, India—
Free Life Member
1863 Anderson, Robt Wm, Rose Terrace,
Forfar
1863 Anderson, Thomas A, Ballachraggan,
Aberdeen
1867 Anderson, Wm Huttonburn, Banochry
1867 Anderson, W H, Anchor Lodge An-
struther
1870 Anderson, William, Steel's Hotel, Glas-
gow
1876 Anderson, William, Wardes, Kin-
toe
1876 Anderson, William, Wellhouse Alford
1861 Anderson, William, Malcolm, Pinatton,
Stirling
1873 Anderson, William W, Norton Muns,
Ratho
1861 Andrew, Hugh, Lennolive Acredilcs,
Haddington
1873 Andrew, Robert, Smeaton, Dalkeith
1870 Andrew, Wm J, Banker, Coat-
bridge
1878 Andrews, John, Melville, Ladybank
1863 Angus, John, Whitefield, Morpeth
1865 Angus, Samuel, Bonnyburn, Aberdeen
1864 Annan, John, Tor, Moonzie, Cupar-
Fife
1872 ANSTRUTHER, Sir W C J C, of An-
struther, But, Carmichael House,
Thankerton
1863 ARBUTHNOTT, Right Hon Viscount, Ar-
buthnot House, Fording
1864 ARBUTHNOTT, Hon Mrs, Norway
1873 ARBUTHNOTT, Hon The Master of, Ar-
buthnot House, Fording

Admitted

- 1856 Archibald, Thomas, of Viewbank, Lasswade
 1876 Archibald, T. B., 30 Craigmillar Park, Edinburgh
 1864 Archer, Thomas, Agent-General for Queensland, 1 Westminster Chambers, Victoria Street, London
 1881 Archibald, Francis, Blackfaulds, Alloa
 1861 Archibald, James, Jamestown House, Monasterewan, Co. Kildare, Ireland
 1869 Archibald, James, Overshields, Fountain-hall, Stow
 1860 Archibald, John, Overshields, Fountain-hall, Stow
 1882 Arzo, James, Cairdseat, Cldny, Aberdeen
 1844*[†]ATHOL, His Grace the Duke of K.G., Inveraray Castle, Inveraray
 1858 Arklay, John, Edinburgh
 1861 Arklay, Robert, of Lathiebeaton, Dundee
 1884 Arklay, Thomas, Downie Villa, Broughty Ferry
 1870 Arkley, R. H., Rosemount, Montrose
 1870 Armour, John, Niddry Mains, Winchburgh
 1884 Armstrong, J. S., Acrehead, Dumfries
 1887 Armstrong, W. J., Craigielaw, Longniddry
 1862 Arnot, David, Friarton, Newport, Fife
 1880 Arnot, Thos., Newton of Lathribk, Falkland
 1871 Arnott, William, Glamis Mains, Glamis
 1862 Arras, Walter, Fodderty, Dingwall
 1837 Arrat, Archd. Tower, Mill Grove, Alloa
 1858 Arundell, W. F. H., of Barjarg, Auld-girth, Dumfries
 1873 Ashdown, A. H., Castle House, Shrewsbury—*Free Life Member*
 1845 Askew, Henry William, late Conishead Priory, Ulverston
 1863 Askew, W., of Pallinaburn, Coldstream
 1863*[†]ATHOLE, His Grace the Duke of K.T., Blair Castle, Blair Athole—*President of the Society*
 1841 ARNOLD, Her Grace the Duchess Dowager of, Dunkeld
 1884 Auchterlonie, Alex., Creich, Cupar-Fife
 1834 Auchterlonie, James, Dothan, Kirkcaldy
 1877 Auld, Peter, Buteland, Balerno
 1881 Auld, R. C., Dexter, Michigan
 1873 Austin, James C., The Gill, Annan
 1887 Austin, James J. M., of Dalmaekerran, Tynron, Dumfries
 1851 Austin, E. S., late Middleton, Muthill
 1880 Austin, Wm., Bank Agent, Thornhill
 1878 AYELAND, Right Hon. Lord, Norman-ton Park, Oakham, Rutlandshire
 1838 Ayling, Thomas Lake, Rochester
 1844 Aytoun, Roger S., of Inchdairnie, Kirkcaldy
 1886 Baillie, A. C., Dochgarroch, Inverness
 1883 Baillie, Major-General Duncan, Lochloy, Nairn
 1883 Baillie, James Evan Bruce, of Dochfour, Inverness
 1869 Baillie, John, Fullerton, Penicuik
 1865 Baillie, John B., late of Leys, Inverness
 1884 Baillie, Hon. Wallace Cochrane, Lamington House
 1847 BAILLIE, Sir William, of Polkemmet, Bart., Whitburn
 1885 Bain, George, Old Mill Reformatory, Aberdeen
 1875 BAIR, Sir James, 3 Park Terrace, Glasgow
 1864 Bain, James, Bank of Scotland, Glasgow
 1877 Bain, W. P. C., Lochrin Iron Works, Edinburgh

Admitted

- 1881 Baird, Alexander, of Urie, Stonehaven
 1878 Baird, Archibald, 67 Robertson Street, Glasgow
 1863 Baird, Arthur E., Birchwood, Pitlochry
 1876 Baird, Colin C., V.S., Veterinary College, Clyde Street, Edinburgh
 1860 BAIRD, Sir David, of Newbyth, Bart., Prestonkirk
 1875 Baird, Hugh, jun., Rosslyn House, Kelvinside, Glasgow
 1848 BAIRD, Sir James Gardiner, of Saughton Hall, Bart., Inch House, Liberton
 1870 Baird, John, Hall, Kirkconnel, Sanquhar
 1871 Baird, John, Solicitor, Lockerbie
 1880 Baird, John, of Knoydart, Inverie House, Isle Ornsay, Skye
 1877 Baird, J. W., 7 Union Street, Edinburgh
 1873 Baird, Thomas, Courance, Lockerbie
 1878 Baird, William, of Elie, Fife
 1878 BALFOUR of Burleigh, Right Hon. Lord, Kennet House, Clackmannan
 1863 BALFOUR, Right Hon. Arthur J., of Whittinghame, M.P., Prestonkirk
 1843 Balfour, Colonel David, of Balfour and Trenable, Kirkwall
 1884 Balfour, Edward, jr., of Balbirnie, Markinch
 1857 Balfour, Major Francis W., of Fernie Castle, Cupar-Fife
 1879 Balfour, Professor Isaac Bayley, Oxford
 1839 Balfour, John, of Balbirnie, Markinch
 1880 Balfour, J. H., 7 Glencairn Crescent, Edinburgh
 1884 Ballantyne, David, Shaws, Newcastleton
 1884 Ballantyne, Wm., Wormiston, Eddleston
 1870 Ballingal, And. H., W.S., Perth
 1881 Ballingal, J. Smith Ronaldson, Ballabus Islay, Greenock
 1871 Ballingal, Neil, Sweetbank, Markinch
 1880 Ballingal, Wm., Sweetbank, Markinch
 1887 Ballingal, D., Factor, Blairdrummond
 1880 Ballingal, George, Clariaw, St Boswells
 1886 Ballingall, Hugh, Provost of Dundee
 1861 Ballingall, John, Dunbog, Newburgh
 1863 Balmer, Thomas, Fochabers
 1878 Barbour, Robt., Gillfoot, Kirkbean, Dumfries
 1858 Barclay, Charles A., Aberdour House, Fraserburgh
 1862 Barclay, J. W., M.P., 60 Dee Street, Aberdeen
 1885 Barclay, Morison, 63 Dee Street, Aberdeen
 1880 Barclay, Robert, Drums, Falkland
 1865 Barclay, Thos., Skelbo Castle, Dornoch
 1882 Barclay, Wm., Gordon Arms Hotel, Keith
 1883 Bardgett, John, 26 Montgomery Street, Edinburgh—*Free Life Member*
 1886 Barr, Duncan C., Factor, Hamilton
 1883 Barr, Hugh, Fearnoch, Tigh-na-bruaich
 1862 Barr, James, jun., Whiteshaw, Carlisle
 1875 Barr, William, Kerrylamont, Rothsay
 1880 Barrett, Robert Bell, Skipton Castle, Skipton, Yorkshire
 1863 Barrie, James, Harden Mains, Jedburgh
 1884 Barron, G. F., Meikle Endovie, Alford, N.B.
 1884 Barrowman, John H., Caigton, Castle-Douglas
 1855 Bartholomew, James, Craigton House, Winchburgh
 1883 Bartholomew, John, Duntarvie, Winchburgh
 1880 Bartlemore, William, Solicitor, Paisley
 1880 Barton, J. P., Hopwas Grange, Tamworth
 1878 Barty, James W., Procurator-Fiscal, Dunblane

Admitted

- 1853 Babb, G. C., 190 Bowhill Street, City
Cuttler—*Free Life Member*
- 1861 Batt, John, Middleton Lane
Works, Glasgow
- 1873 Bruchoppe Thomas, Land Surveyor, East
Brucefield, West Calder
- 1877 Baxter, David, Ladyburn Mayhole
- 1886 Baxter, Edward G. of Tassie, Llandovery
- 1854 Baxter, Edmund, W. S., 9 Rutland
Square Edinburgh
- 1882 Baxter Frederick, Seedsman, Inverness
- 1875 Bayley, George of Mannel, 13 Regent
Terrace, Edinburgh
- 1884 Bayne, John, Builder, Bridge of Allan
- 1869 Bayne, Lewis, Kimmel Park, Aber-
deen
- 1876 Bean, Alex., Netherthrd, Rothie Nor-
man
- 1876 Bean, George Balgumham Inverurie
- 1855 Bern, James, Muns of Dumfriesshire,
Glasgow
- 1876 Beann, Wm., Newton, Cairme, Huntly
- 1886 Beath, David, Auchmur Loch
- 1882 Beaton, James Munro, London
- 1885 Beaton, John Station Hotel Inverness
- 1874 Beattie James, Newbie House, Annan
- 1879 Beattie, James, Rockdale Cottage,
Perth
- 1882 Beattie, James A. C. E., Aberdeen
- 1870 Beattie, John Bulmusknoe Canonbie
- 1886 Beattie, John Pringle Newcastleton
- 1877 Beattie, Simon, Annan
- 1876 Beattie, William J. P., Newbie, Annan
- 1882 Beckett, C. R. Rockville Old Mills, Port
Dundas Glasgow
- 1876 Beedie, James, The Vams, Ardlaw,
Fraserburgh
- 1873 Begg, Robert, Blarrie Luss
- 1873 Begg, Robert Burns, Sheriff Clerk, Kin-
ross
- 1876 Beith, Donald, W. S., 15 Grosvenor Cres-
cent, Edinburgh
- 1877 Beith, Gilbert, 7 Royal Bank Place,
Glasgow
- 1882 Belfrage, A. J., 3 Durham Road, Porto-
Bello
- 1871 Belfrage, A. W., C. E., 1 Erskine Place,
Edinburgh
- 1849 Belfrage James, Samuelston East Mains
Haddington
- 1867 Bell, Alexander, Alford Wooler
- 1888 Bell, Alexander, St. Andrew, Lockerbie
- 1879 Bell, Alexander, Kirkton of Leasing,
Dundee
- 1872 Bell, And., late Fane, Earlston
- 1886 Bell, David, Todhall, Cupar Fife
- 1887 Bell, Edwin Weston, Roscoe, Forgan
denny
- 1871 Bell, George, Barns of Claverhouse,
Dundee
- 1886 Bell, George, Minica, Lockerbie
- 1883 Bell, James, Quarry Brook, Maghull,
Liverpool
- 1887 Bell James Harriott, of Roscoe Forgan
denny
- 1879 Bell, Dr James M. Kettle Fifehire
- 1871 Bell, John of Castlecreave, 35 Dublin
Street, Edinburgh
- 1876 Bell, John, late Mains Fraserburgh
- 1880 Bell, John, Stenton St Monance
- 1881 Bell, John B., Burnton, Albion
- 1848 Bell, E. of Luma, Belmont, Falkirk
- 1889 Bell, Robert, Avenue House, Stow
market
- 1884 Bell, Thomas, Cortleferry, Stow
- 1886 Bell, Thomas, Ballinshoe, Kilmuir
- 1885 Bell, Thomas, Craigmarnochy Terrace,
Burntisland
- 1877 Bell, Thomas (Messrs Robey & Co.),
Lincoln

Admitted

- 1871 Bell, William of Grubbs Kirkcudbright
- 1869 Bell, William, Kennacott, Dunkeld
- 1876 Bell, William, Sheriffhalls, Shankerton
- 1878 Bell, William Todholes, Annan
- 1855 Bell, William Scott, yr of Woll,
Hawick
- 1877 Bennet, Arthur, South Pitkennie, Loch-
gelly
- 1884 Benson, R. A., 11 Caledonian Place
Clifton—*Free Life Member*
- 1858 Benton, Joseph Harthill, Whitehouse
- 1858 Benton, William, Cattie, Whitehouse
- 1882 Beresford, John George Massy, of
Machiehill, Lamancha
- 1863 Berry, Walter, 11 Athole Crescent,
Edinburgh
- 1882 Bertram, Archd Douglas, Kersewell,
Carnwath
- 1877 Bertram, David N., St Katherine's
Works, Sciennes Street, Edinburgh
- 1883 Bertram, Hugh, Newlyth, Prestonkirk
- 1874 Bertram, John, Addinstone, Lundy
- 1884 Bertram, John S. Cranthams Duns
- 1884 Bertram, 1 Hardy C. E., 1 Fyfe-
Road, Bekenham, Kent
- 1852 Bertram, William, of Kersewell, Cun-
wath
- 1882 Bertram, William Lieut, 96th Regiment
yr of Kersewell, Cunwath
- 1877 Bertram, William St Katherine's Works
Sciennes Street Edinburgh
- 1861 Berwick, David, Ayr, Elie Fife
- 1878 Berwick, John, Whiteside, Kirkcudbright
- 1876 Best, John, Inveravon, Polmont
- 1848 Bethune, Alexander of Bleho, Cupar
Fife
- 1853 Bethune, Angus, Seafield, Inverness
- 1833 Bethune, Colonel R., of Nydie, St
Andrews
- 1864 Bethune, Murdoch, Brae, Dingwall
- 1857 Bett, James, 20 St Bernard's Crescent,
Edinburgh
- 1884 Bett Thomas, 12 St Bernard's Crescent,
Edinburgh
- 1884 Bett Thomas, Ptermo Dundee
- 1849 Beveridge, David, Buckthorns Largo
- 1862 Beveridge, George, 248 High Street,
Kirkcaldy
- 1869 Beveridge, Jas., Crombie, Dunfermline
- 1882 Beveridge, John, jr., of Kinneston,
Leslie, Fife
- 1844 Beveridge, Thomas, of Balado, Kinross
- 1872 Beveridge, William, of Bonnyton, Dun-
fermline
- 1862 Beveridge, William, 248 High Street,
Kirkcaldy
- 1881 Beveridge, William, jun., East Grange,
Dunfermline
- 1882 Bing, Thomas, Leicester House, Great
Dover Street, London
- 1878 Bigger James Grange Farm, Dal-
beattie
- 1859 Biggar, T., of Chapelton Dalbeattie
- 1886 Biggar, William Chapelton, Dalbeattie
- 1859 Binnie, John Binnieknows Cockburns-
path
- 1877 Binnie, Thomas, Auction Mart, Falkirk
- 1875 Bunny Andrew 9 Hart Street, Edin-
burgh
- 1855 Birch, Walter de Houghton, Chew
Magna, Somerset, Bristol—*Free Life
Member*
- 1874 Bird, Ebenezer, Glenduckie, Newburgh,
Fife
- 1858 Bird, James B., Fishwick, Paxton
- 1883 Birnie, Alex., Wellhouse Beaulieu
- 1875 Birse, John, Summerfield, St Ola,
Orkney
- 1874 Buscoe, 1 Ramsay, of Newton,
Inverness

Admitted

- 1879 Bisset, Alexander, Farm Manager, Balfarg, Markinch
1878 Bisset, Hugh, late Pitarrow, Laurence-
kirk
1873 Bisset, Thomas S., Agricultural Engi-
neer, Blairgowrie
1865 Black, Major Alex., Land Agent and
Valuer, Oxford
1884 Black, Captain, of Balcowan, Perth
1883 Black, Donald, jun., Clachan, Lochfyne-
head, Inveraray
1876 Black, Gavin, Wester Moffat, Airdrie
1877 Black, George, Sea-View Works, Ber-
wick-on-Tweed
1870 Black, George, Victoria Street, Perth
1870 Black, George, Banker, Inverness
1877 Black, James, of Auchentoshan, Dun-
tochter
1871 Black, James, *Elgin Courier* and
Courier, Elgin
1851 Black, Jas. (Late Factor, Ellon), London
1883 Black, James, Tullybreck, Markinch
1855 Black, James, Bartholomew, Old Mel-
drum
1870 Black, John, Ford, Westfield, Cornhill,
Northumberland
1876 Black, John, Cortachy, Kirriemuir
1883 Black, Robert, C.E., Inverness
1876 Black, Thomas, Craignecross, Stranraer
1877 Black, William Connel, of Kailzie,
Peebles
1876 Blackburn, James, Killearn House,
Glasgow
1886 Blackett, Lieut.-Col. Christopher E., of
Arbuthnot, Dumfries
1883 Blackett, J. S., Raith, Kirkcaldy
1870 Blacklaw, Alex. Scott (late Milton of
Arbuthnot, Lordoun), Brazil
1855 Blackley, John, 203 Hope Street, Glas-
gow
1875 Blackwood, Alex., Stobo Mill, Stobo
1862 Blackwood, William, Publisher, 45
George Street, Edinburgh
1881 Blake, Wm. L., Holydean, St Bos-
wells
1861 Blair, Edward Heron Maxwell of Pen-
ninghame, Newton Stewart
1860 Blair, Sir Edward Hunter, of Blair-
quhan, Bart., Maybole
1864 Blair, James, Aberlady
1886 Blair, James, Bankfoot, Inverkip
1874 Blair, Jn., W.S., 0 Ettrick Road, Edin-
burgh
1874 Blair, Patrick, Advocate, Sheriff-Sub-
stitute, Inverness
1870 Blair, Patrick, W.S., 7 York Place, Edin-
burgh
1882 Blair, Robert, Inversnaid Hotel, Loch
Lomond
1814 Blair, Captain William Fordyce, of
Blair, R.N., Dalry, Ayrshire
1876 Blake, John, Dunrobin Mans, Golspie
1873 Bland, Thomas, late Greystone, Tully-
nessie, Aberdeen
1886 Blane, Colonel Robert, C.B.
1848 BLANTYRE, Right Hon. Lord, Erskine
House, Glasgow
1877 BLANTYRE, The Hon. the Master of,
Scribberscross, Rogart
1861 Blues, Andrew A., 20 Minto Street,
Edinburgh
1881 Blyth, A. H., Frankfield, Turtle Moun-
tain, Wankopa Co., Manitoba
1879 Blyth, James, Leckiebank, Auchter-
mucky
1883 Boden, Wm. F., Scotshurn, Parkhill
1884 Bodtker, Anker, Swedish Consul, 8 Com-
mercial Street, Leith
1881 Bogle, John, Auckland New Zealand
1884 Bogle Major Bank Agent Kinross

Admitted

- 1883 Bolam, John, Bilton, Lesbury, North-
umberland
1868 Bolam, Robert George, Berwick-on-
Tweed
1880 Bolton, Edwin, Carbrook, Larchert
1855 Bolton, Joseph C., of Carbrook, M.P.,
Larchert
1883 Donallo, Wm. C., Dalzell Farm, Mother-
well
1852 Bone, William, Shalloch Park, Girvan
1873 Bonnor, C. H., late 35 Grange Loan,
Edinburgh
1879 Bonthorne, Alexander, Newton of Falk-
land, Falkland
1870 Boog, Thomas Elliot, 20 Pentland
Terrace, Edinburgh
1842 Bouth, Jas. Godfrey, Seed Merchant,
Hamlur.
1873 Boothby, Robert Cunningham, Heatherly
Hall, Moffat
1878 Borkland, John, Auchencairn, Closeburn,
Thornhill
1882 Borland, William, Townfoot, Closeburn,
Thornhill
1850 Borthwick, Alex. Hay, Ladiesyle Lodge,
Melrose
1873 Borthwick, Alex. Hay, Langholm
1854 Borthwick, Gilbert, East Learmouth,
Carnhill-on-Tweed
1878 Borthwick, John, V.N., Kirkliston
1846 Borthwick, John, of Crookston, Heriot
1850 Borthwick, John James M., Billholm,
Langholm
1838 Borthwick, Thos. Chalmers, Langholm
1858 Borthwick, Wm. Henry, Barham, Cupar-
Fife
1864 Burton, John, Barton House, Malton
1855 BUSWELL, Sir Geo. Houston, of Black-
adder, Bart., Chirnside
1884 Botwell, Wm., Berryhill, Bridge of
Dun, Aberdeen
1870 Bower, Alfred Lance, Strathaird House,
Broadford
1873 Bowhill, James, Banker, Ayrton
1830 Bowman, James, Newark, St Monance
1879 Bowman, James, Square, Huntly
1857 Bowman, Thomas, Vayne, Fearn,
Brechin
1865 Boyd, Colonel James Hay, of Townend,
Symington, Kilmarnock
1861 Boyd, John B., of Cherrytrees, Kelso
1844 Boyd, Wm., Killmoline, Morvern, Oban
1863 Boyd, William B., of Faldonside,
Melrose
1881 Boyle, Captain David, of Shewalton,
R.N., Dreghorn, Ayrshire
1884 Braid, Thomas, Assistant Factor, New
tyle
1875 Bramwell, John, Blackaidie, Sanquhar
—Free Life Member
1872 Brand, James, Dunbar
1884 Branford, Professor W. C., 22 Clarence
Street, Edinburgh
1855 Brash, James, Hallyards, Kirkliston
1870 Brelmer, Alexander, Balquhainduchy,
Methlick
1876 Brebner, Robert, Surradale, Westfield,
New Spynie
1873 Brechin, James, 1 West Newington
Terrace, Edinburgh
1883 BREADALBANE, Most Noble The Marquis
of, Taymouth Castle, Aberfeldy
1872 Breingan, Alexander, Merchant, Helens-
burgh
1880 Bridges, Andrew, Engineer, North
Berwick
1855 Briggs, Major-General, of Strathairly,
Largo
1872 Brigham, John, Castle Gate Implement
Works, Berwick-on-Tweed

Admitted

- 1865 Brims, James, Thurso
 1880 Broad, Anthony, Edenside Road, Kelso
 1878 Broadfoot, Peter, West Mains, Kirkcaldy
 1868 Broadwood, Thomas, of Fulfordlees, Crowhill, Dunbar
 1873 Broatch, George, Thwait, Ruthwell
 1881 Brock, Hugh, V.S., 112 North Street, Glasgow
 1876 Bruck, J. E., Overton, Kirkcaldy
 1874 Bruck, John, Aukhorne, Wick
 1873 Brock, William, Keithock Mains, Coupar Angus
 1857 Brockley, Robert M., Gourlaw, Rosewell
 1875 Brodie, Hugh, of Brodie, Brodie Castle, Forres
 1853 Brodie, Cathness, The Drium, Nairn
 1850 Brodie, James, 9 Nelson Street, Edinburgh
 1845 Brodie, James C., Thorntonloch, Dunbar
 1850 Brodie, James W., Cloheen, Buttevant, Co. Cork
 1872 Brodie, John, South Bank, Bowden, St Boswells
 1840 Brodie, J. Clerk, of Idvies, W.S., 26 Moray Place, Edinburgh
 1877 Brodie, Thomas Dawson, of Gairdoch, W.S., 9 Ainslie Place, Edinburgh
 1873 Brodie, William, of Bush, Barkerland, Dumfries
 1873 Brook, Edward, Hodiam Castle, Ecclefechan, Meltham Hall, Huddersfield
 1855 Broomfield, Thomas, Lauder
 1857 Broomfield, W. J., Old Greenlaw, Greenlaw, Duns
 1873 Brochie, George, Grinkle, Loftus, R.S.O.
 1883 Brugham, Dr James Peter, Culduthel, House, Inverness
 1854 Broughton, Robert Henry, of Rowchester, Greenlaw, Berwickshire
 1868 Brown, Adam, Hyndhope, Selkirk
 1844 Brown, Alexander J., Dennistoun, of Balloch, Balloch Castle, Alexandria, N.B.
 1878 Brown, Alexander, Banker, Oban
 1852 Brown, Andrew, M.D., late Edinburgh
 1879 Brown, Andrew, Factor for the Earl of Zetland, Kerse, Falkirk
 1858 Brown, Archibald, Craig, Tdny
 1874 Brown, Archibald C., Gledstone Park, Bishopton
 1806 Brown, David, Banker, Maybole
 1878 Brown, David, Eilerslie, Kirkmahoe
 1839 Brown, George, Watten Mains, Watten
 1877 Brown, George, 57 Hanover Street, Edinburgh
 1850 Brown, James, Hardgrave, Ruthwell, R.S.O.
 1865 Brown, James, Whinpark, Kilmarnock
 1871 Brown, James, late St Andrews
 1864 Brown, James, Floors, Kelso
 1866 Brown, James, Burnside, Holywood, Dumfries
 1836 Brown, James H., Banker, Ellon
 1873 Brown, James, Goddes, Distiller, Keith
 1857 Brown, James, Weston, Carnwath
 1878 Brown, James, of Orchard, Carlisle
 1872 Brown, John, Murrays, Ormiston, Tranent
 1857 Brown, John, Biggar
 1868 Brown, John, Brownville, Kilsyth
 1878 Brown, John, of Colton, Dumfries
 1877 Brown, John, Lissenamoss, Kilwinning
 1873 Brown, John, Airds of Kirkconnell, New Abbey, Dumfries

Admitted

- 1884 Brown, John, Craigie Cottage, Hardgate, Aberdeen
 1880 Brown, John, East Housebyres, Gala-shiels
 1883 Brown, John, Shields, East Kilbride
 1859 Brown, John Alexander Harvie, of Quarter, Dunipace, Laibert
 1878 Brown, John Gordon, Lochanhead, Dumfries
 1876 Brown, John H., Wairoa, Hawke's Bay, New Zealand
 1860 Brown, John C., Between-the-Waters, Ecclefechan
 1870 Brown, Jos., Hermitage, Dalbeattie
 1863 Brown, Joseph, Little Endovie, Alford
 1861 Brown, Ohphant, Mains of Duchrae, Castle-Douglas
 1856 Brown, Peter, Craigton, Bishopton
 1871 Brown, Peter, Milton of Luncarty, Redgorton
 1881 Brown, Richard, C.A., 28 St Andrew Square, Edinburgh
 1886 Brown, Stephen, Kilhillan, Lochalsh
 1875 Brown, Thomas, Fentland Mains, Loanhead
 1849 Brown, Thomas, Weston, Dunsyre, Dolphinton
 1834 Brown, Thomas Gullyhill, Holywood, Dumfries
 1877 Brown, T. M., Closeburn Castle, Thornhill
 1883 Brown, William, Currievalle, Currie
 1871 Brown, William, Factor, Earlsmill, Forres—Free Life Member, 1873
 1884 Brown, William, Carterton, Lockerbie
 1873 Brown, William, Parkgatestone, Biggar
 1854 Brown, William, of Dunkinty, Elgin
 1887 Brown, Rev. W. L. Wallace, The Manse, Ainess
 1873 Brown, William, Pitnamoon, Laurencekirk
 1874 Browne, A. H., Doxford Hall, Chathill, Northumberland
 1873 Browne, Colville, Park House, Long Melford, Suffolk—Free Life Member
 1885 Brownlee, George, Cousland, Bathgate
 1875 Brownlee, James, East Whitburn Farm, Whitburn
 1872 Brownlie, Alex., Haughhead, Earls-ton
 1877 Brownlie, James, Bloom, Mid-Calder
 1877 Brownlie, Robert, Bogside, Newmains, Carlisle
 1875 Brownlie, Thomas, 155 St Vincent Street, Glasgow
 1879 Bruce, Andrew, Jordanston, Meigle
 1874 Bruce, Andrew Hamilton Tyndall, of Falkland, Ladybank
 1878 Bruce, David C., Broadlands, Huntly
 1877 Bruce, Edward, 26 Greenside Place, Edinburgh
 1884 Bruce, George, Pennan Farm, Fraserburgh
 1868 Bruce, George, Heatherwick, Keith Hall
 1874 Bruce, George, Seedsman, 35 Market Street, Aberdeen
 1871 Bruce, George C., C.E., Ronceverte, West Virginia, U.S.A.
 1875 Bruce, Henry, of Ederline, Lochgilphead
 1868 Bruce, James, Inverquhomery, Mintlaw
 1876 Bruce, James, Collithie, Gartly
 1863 Bruce, John, of Sumburgh, Lerwick
 1842 Bruce, John, W.S., 7 Melville Crescent, Edinburgh
 1876 Bruce, Peter, Myreton, Inch, Aberdeen
 1868 Bruce, Robert, Manor House Farm, Great Smeaton, Northallerton

Admitted

- 1871 Bruce, Robert, Tddington
1880 Bruce, Lieut.-Gen. Robert, of Glen-
deuglie, Milnathort
1875 BRUCE, Hon. Robert Preston, M.P.,
Broomhall, Dunfermline
1852 BRUCE, Hon. Thomas Charles, 42 Hill
Street, Berkeley Square, London, W.
1835 Bruce, Thomas, of Arnot, Arnot Tower,
Leslie, Fife
1864 BRUCE, Sir William C., of Stenhouse,
Bart., Falkirk
1875 Bruce, William L., late Glenkill, Lam-
lash
1870 Bruges, Edward C., Dalgig, New Cum-
nock
1866 Brunton, James, Broomlands, Kelso
1867 Brunton, J. S., Ladhope House, Gala-
shiels
1855 Brunton, William, 4 Bernard Street,
Leith
1870 Bryan, F. G. D., late Drumpellier, Coat-
bridge
1875 Bryce, Andrew, Craigentenny, Jock's
Lodge, Edinburgh
1881 Bryce, David, Albotsinch, Paisley
1865 Bryce, James, East Whitburn, Whit-
burn
1877 Bryce, William C. (late 26 South Bank
of Canongate, Edinburgh), Dublin
1880 Bryden, John, New Mans, Scone,
Perth
1862 Brydon, Adam, Netherharns, Galashiels
1834 Brydon, H., Kinnelhead, Moffat
1851 Brydon, James, Kinnelhead, Moffat
1864 Brydon, James, jun., Holm of Dalqu-
harn, Dalry, New Galloway
1884 Brydon, John, Forester, Rothes
1884 Brydon, John, Seed Merchant, Darling-
ton
1873 Brydon, Robert, The Dene, Seaham
Harbour—*Free Life Member*
1883 Brydon, Thomas T., Burncastle, Lauder
1879 Brydone, Walter S., Land Steward,
Callendar, Falkirk
1850 Bryson, Robert, Merchant, Glasgow
1852 Bryson, W. G., Cullen House, Cullen
1833 BYSCOLETCH and QUEENSBERRY, His
Grace the Duke of, K.T., Dalkeith
1835 BYSCOLETCH and QUEENSBERRY, Her
Grace the Duchess Dowager of,
Bournton House, Kettering
1880 Buchan, Alexander, 72 Northumberland
Street, Edinburgh
1834 Buchan, Thomas, Balhousie, Largo
1854 Buchanan, A., Whitehouse, Strling
1857 Buchanan Alexander, Norwood, Miln-
gavie
1831 Buchanan, Dr Alexander, Three, Tober-
mory
1881 Buchanan, Angus, Auchinveir, Ledaig
1870 Buchanan, Archibald, of Curriehill,
Currie
1886 Buchanan, Benjamin, Gobbs, Arbuth-
nott, Fordoun
1840 Buchanan, Lieut.-Col. D. C. R. Carrick,
of Drumpellier, C.B., Coathridge
1873 Buchanan, David, Garscadden Mains,
New Kilpatrick
1833 Buchanan, Dun., Auchinbreck, Colin-
traive, Greenock
1877 Buchanan, D. M.L. B., of Boquhan,
Killearn
1878 Buchanan, Francis Wellesly, Leny,
Callander
1882 Buchanan, George, of Arden, Bridge of
Allan
1873 BUCHANAN, Sir George H. Leith, of
Ross, Bart., Ross Priory, Alexandria
1870 Buchanan, Captain J. R. Gray, of Scot-
stone, Eastfield House, Cambuslang

Admitted

- 1872 Buchanan, John, C.E., 24 George Street,
Edinburgh
1877 Buchanan, John, Gartness, Killearn
1878 Buchanan, Robt., Blairquhosh, Strath-
blane
1878 Buchanan, Robert, Letter Farm, Kil-
learn
1875 Buchanan, William (late 391 Parlia-
mentary Road, Glasgow), America
1895 Bulloch, Ar., Miliken, Bishopbriggs
1875 Bullock, Matthew, 11 Park Circus,
Glasgow
1884 Bullough, John, of Meggernie, Aber-
feldy
1882 Buntine, J. R., Sheriff-Substitute, Stir-
ling
1870 BURNETT-CUTTS, Right Hon. Baroness,
1 Stratton Street, Piccadilly London
1884 Burn, C. M. P., Prestonfield House,
Edinburgh
1874 Burn, Forbes, late Hardacres, Cold-
stream—*Fr. Life Member*
1862 Burn, John, Ednam, Kelso
1877 Burnett, James, 4 Malta Terrace, Edin-
burgh
1877 Burnett, Alex. L., W.S., 47 Heriot Row,
Edinburgh
1807 Burnett, Major-General Francis Claude,
of Gadgirth, Tarbolton
1848 Burnett, George, Advocate, 21 Walker
Street, Edinburgh
1858 BURNETT, Sir Robert, of Leys, Bart.,
Crathes Castle, Banffshire
1883 Burnley, W. F., 24 Ainslie Place, Edin-
burgh
1873 Burns, And., Harelaw, Lommlidry
1845 Burns, Jas. C., Fern Tower, Crief
1845 Burns, J., of Castle Wyndys, Greenock
1861 Burns, John William, of Kilmahew,
Cardross
1875 Burr, Alexander, Tulloford, Old Mel-
drum
1877 Burr, John M., Netherton, Fyvie
1867 Burr, Rev. P. Lorimer, Lundie Manse,
Dundee
1878 Burrell, James, Denovan Mains,
Denny
1854 Burroughs, Lieut.-General F. W. Traill,
C.B., of Rousay, Orkney
1867 Burton, J. Tait, of Toxside, Gore-
bridge
1857 Burton, J., Rosewell Mains, Rosewell
1882 Burton, Matthew Bernard, Rosewell
Mains, Rosewell
1867 BURTON, Most Noble the Marquis of, K.T.,
Mount Stuart, Rothesay
1861 Buttar, David, Corston, Coupar Angus
1882 Buttar, Thos. A., Corston, Coupar-
Angus—*Free Life Member*
1877 Buttar, Albert, Union Bank, Perth
1870 Buyers, James, junior, Easter Brakie,
Arbroath
1884 Byres, W., Beadsmill, West Calder
1844 Cadell, Lieut.-General A. T., R.A.,
Upper Norwood, London, S.E.
1856 Cadell, Henry, of Grange, Boness
1889 Cadzow, James, Bangour, Uphall
1884 Cadzow, Robt., Borland, Biggar
1878 Caird, Alex. M'Neel, 73 Inverleith Row,
Edinburgh
1858 Caird, Sir James, of Cassenry, K.C.B.,
Creetown
1864 Cairns, James, Balquharn, Menstrie
1870 Cairns, John, Parkhill House, New-
burgh, Fife
1884 Cairns, John, Winkston, Peebles
1861 Cairns, William, Belhie, Auchterarder
1871 Cairns, Robert, Bertha Park, Perth
1873 Calder, Adam, Halterburn, Kelso

Admitted

- 1853 Calder, Francis, Yetholm Muns
Kelso
1855 Calder James, or Aungate, Foron
deany
1857 Calder James Colman Crofters
1857 Calder Robert, Little Swinton, Cold
stream
1875 Calder R. Rasmussen, Panchon-Ternan
1884 Calder Robert, Munnill, Falkirk
1884 Calder, Thomas A., Dilbe Mams,
Reston
1851 Calder, W., Cattle Salesman, 19 Archi-
bald Place, Edinburgh
1886 Calder, William, 21 Commercial Street,
Leith
1872 Calder, W. A., Oxenize, Coldstream
1841 Caldwell, Fred., of Murrish, 4 Hanover
Terrace, Regent's Park, London
1878 Caldwell, Hugh of Brier Kilbrachan
1884 Cameron, Alex., Drumzie Golaie
1866 Cameron, Alex. (of Mainhouse), High-
field, Elgin
1883 Cameron, Archd., Killen Avoch
1883 Cameron, John M., Balmakie Mun-
loch
1850 Cameron Donald of Lochiel, Auchm-
carry Fort-William
1882 Cameron Donald Mossfield Oban
1857 Cameron Duncan Imker Tam
1877 Cameron Duncan, Kinloch Rannoch
1841 Cameron, Duncan Fettes, Inverness
1878 Cameron Hugh Lwen Newton Leys,
Aithlourne Duthchire
1881 Cameron, James, Muthill Farm
Works Forth
1878 Cameron, Dr James Angus, of Fuhall,
Nairn
1871 Cameron, John, Fraserfort Fort William
1881 Cameron, John, Keil Fort William
1876 Cameron, J. C., of Garrows, Amullee,
Dunkeld
1802 Cameron, Wm., late Factor, King
ussie
1837 Campbell, Alex., of Auchindarroch,
Lochliphead
1835 Campbell Alexander of Cammo, 6
Charlotte Square, Edinburgh
1808 Campbell, Alex. Belmont, Aberdeen
1854 Campbell, A. D., of Kilmartin, Glen-
Urquhart
1863 Campbell, A. H., of Little Grove,
Herts
1857 CAMPBELL Lieut Col Sir Arch. C., of
Blythwood Bart M P, Renfrew
1876 CAMPBELL Sir Archibald S. L., of Suc-
coth, Bart, 23 Moray Place, Edin-
burgh
1880 Campbell, Rev Arch., Assapul, Bunes-
san Mull
1805 Campbell, Lieut Col., of South Hall,
Crichtonvale
1865 Campbell, Lieut Col A. H., Cun-
noquhie, Cupai Fife
1853 Campbell, Colonel Charles V. H., of
Nether Place, Mauchline
1838 Campbell, C. G., of Stonefield, Tar-
bert
1858 Campbell, Admiral Colin Yorke, of
Barbreck, Lochgilphead
1875 Campbell, Captain Duncan, of Inverneil
and Ross, Ardbrachy
1870 Campbell, Duncan, Stronmich, Glen-
tyon, Aberfeldy
1858 Campbell, D. T., Dunletter, Dalnally
1882 Campbell, Edward P., Captain, 42d
Highlanders, Colntraive, Greenock
1871 Campbell, G., Rhodes, North Ber-
wick
1873 Campbell, George, Kilkea, Mageny Co.
Kildare—*Free Life Member*

Admitted

- 1850 Campbell George William late Marfu
London
1855 Campbell, Lieut Col H Bunley, of
Baltimore, T. na bruaich
1852 Campbell Captain Henry John Fletcher
R. A., Korrhan Stirling
1834 CAMPBELL, Sir Hugh Hume, of March
mont, Bart., Duns
1838 CAMPBELL Sir James, of Aberuchl
bart, Wheatmead Park, Lydney
1838 Campbell James, of Julia, Greenock
1875 Campbell, James, Rosebank, Gatehouse
1858 Campbell, James, London
1847 Campbell, J., of Tillichewan, Alex-
andra
1877 Campbell, James, late Ormaig, Loch-
gilphead
1810 Campbell, James A., of Stracathro
M P, Leith
1800 Campbell James G. of Killyleoch 2,
Windsor Street, Edinburgh
1857 Campbell, James, Morton Peto, 31 of
Stracathro, Leith
1844 Campbell John of Kilberry, Tarbert
1846 Campbell, J. L., of Achalader, Blair-
gowrie
1874 Campbell John, 88 West Regent Street,
Glasgow
1877 Campbell, John, Glenforsa, Aros Mull
1866 Campbell, John Graham of Shuvau
Castleton Lochgilphead
1838 Campbell, Ord Graham, 5 Oxford Ter-
race, Edinburgh
1861 Campbell, R. I. F., of Craigie, M P,
Ayr
1835 Campbell, Robert J., Slagshaw, Castle
Douglas—*Free Life Member*
1856 Campbell, Silvester, Kinellar, Black-
burn, Aberdeen
1876 Campbell, Silvester, jun., Toftthills,
Kintore, Aberdeen
1800 Campbell, Thomas, Croftness, Aber-
feldy
1863 Campbell, T. H., Guernsey
1856 Campbell, T. W., of Walton Park, Dal-
beattie
1838 Campbell William, Solicitor, 14 Almaden
Street, Hamilton
1878 Campbell, Wm., late Cartcarton
Lockerbie
1871 CAMPERDOWN, Right Hon the Earl of,
Camperdown, Dundee
1870 Cannon, James Unoch, Castle Douglas
—*Free Life Member*
1877 Cannon, John Laidlaw, Parton
1868 Cant, James, Old Bridge, Kirkcaldy
1878 Canthe Charles A. Nairn
1850 Carfrae T. Land Surveyor, 9 Osborne
Terrace Edinburgh
1845 Carlyle, T. J. of Templehill, Water-
beck Ecclefechan
1881 Carmichael George Henry Gilson
Castle Craig, Dolphinton
1880 Carmichael, John Bellevue, Coldstream
1882 Carmichael, Peter, Cladville, Bridgend
T. na
1881 Carmichael Thomas David Gibson 31
of Skirling, Castle Craig, Dolphim-
ton
1856 CARMICHAEL, Sir William H. Gilson of
Skirling Bart, Castle Craig, Dolphim-
ton
1886 Carmont James, British Linen Company
Bank Dumfries
1886 Carnegie, Alex. of Redhall, Forthbank
House, Brechin
1856 CARRON Hon Charles, late St Andrews
1847 Carnegie, D. of Stronva, Lochearnhead
1809 Carnegie, Henry L., of Kinblethmont,
Aberloath

Admitted

- 1880 Carnegie James, of Aytoun Hill, Newburgh, Fife
 1888 Carnegie, Wm., of Dunlappie, Brechin
 1888 Carnegie, W., jr., of Dunlappie, Coull, Forfar
 1880 Carnegie, Wm. C., Sarsden, Chipping Norton
 1850 Carney, John, Glasgow
 1869 Carphin, Jas. Rhind, C.A., 14 Hanover Street, Edinburgh
 1878 Carr, Robert, Felkington, Norham, Berwick-on-Tweed—Free Life Member
 1876 Carre, Thomas A. Riddell, of Caver-carre, St Boswells
 1871 Carrick, Charles, Baad, Stirling
 1872 Carrick, Thos. A., Easter Cambusdrennie, Stirling
 1884 Carruthers, John, of Miln, Kirkhill, Moffat
 1870 Carruthers, John, Tundergarth, Lockerbie
 1876 Carruthers, Joseph, Annan Bank, Moffat
 1882 Carruthers, Joseph, British Linen Company Bank, Sanquhar
 1875 Carruthers, Robert, Courier Office, Inverness
 1870 Cairuthers, R. D., Huntingdon Lodge, Dumfries
 1888 Carslairs, Drysdale, Hailes House, Fairfield, Liverpool
 1884 Carslairs, Thomas, late Newbigging of Ceres, Ceres, Fife
 1860 Carswell, David, of Rathillet, Cupar-Fife
 1885 Carswell, Hugh, Oakleigh, Ashton-on-Mersey
 1885 Carswell, John H., Straiton, Leuchars
 1880 Carter, James, 5 Mayfield Gardens, Edinburgh
 1868 Cartwright, T. R. B. Leslie Melville, Melville House, Ladybank
 1861 Carver, John, Kinloch, Meigle
 1877 Cathcart, James P., 135 Buchanan Street, Glasgow
 1886 Cathcart, James T., jr. of Pitcairrie, Auchtermuchty
 1887 Cathcart, R., of Pitcairrie, Auchtermuchty
 1872 Catley, W. E., of Edderton, Tain
 1866 Cattannach, A., of Auchintorie, Paisley
 1876 Caven, Thomas, Birkslaw, Glencairn, Dunscore
 1884 Caverhill, Andrew M., Crichness, Duns
 1871 Caverhill, John, Jedneuk, Jedburgh
 1880 CAWTON, Right Hon. the Earl, Cowdor Castle, Salsburgh
 1877+CECIL, Right Hon. Lord Arthur, Orchard Mains, Innerleithen
 1877 CECIL, Right Hon. Lord Lionel, Orchard Mains, Innerleithen
 1874 Chalmers, Arch., of Kipp, Dalkeith
 1871 Chalmers, Jas., Shieldhill, Stanley, Perth
 1879 Chalmers, John, Westwood, Stanley, Perth
 1864 Chalmers, William, Souterton, Forgue, Huntly
 1884 Chambers, T. W., Prospect House, Palutho, Abbey Town
 1864 Chambers, Robert, 10 Claremont Crescent, Edinburgh
 1849 Chancellor, J. G., of Shieldhill, Biggar
 1867 Chandler, Henry, Globe Works, South Hall Street, Manchester
 1880 Chaplin, George Robertson, of Murlinden, Brechin
 1880 Chaplin, Capt. Thomas Robertson, Lawhead House, Carnwath
 1873 Chapman, James, Ballencrieff Mill, Bathgate
 1883 Chapman, Wm., Meadowhead, Airdrie

Admitted

- 1873 Charles, John, Town and County Bank, Inverurie
 1870 Charlton, John, Corn Merchant, Dumfries
 1867 Charlton, Matthew, jun., Browndean-laws, Jedburgh
 1860 Cheape, Col. Charles, of Kilmindie, Lochaline, Morven, Argyllshire
 1883 Cheape, Captain G. C., of Wellfield, Strathmillo
 1881 Cheape, James, jr. of Lathockar, St Andrews
 1800 Chinnside, G., Edrington House, Berwick
 1881 Chirnside, John, 48 Albany Street, Edinburgh
 1895 Chisholm, Duncan, 42 Waterloo Place, Inverness
 1871 Chisholm, John, East Kirkland, Wigtown
 1884 Chisholm, J., Wimbeldon Cottage, Rothesay
 1874 Chisholm, John, Ironmonger, 8 Church Street, Inverness
 1850 Christie, Andrew, Glencurn, Dipton, Southland, New Zealand
 1850 Christie, Charles, J., late Westbank, Tranent
 1862 Christie, C. J., 6 Glenorchy Terrace, Newmarket, Edinburgh
 1879 Christie, Francis Walter, Dairsie Mains, Cupar-Fife
 1881 Christie, Gilbert, Auchlyne, Killin
 1873 Christie, James, Culfeinhove Mains, St Ninians
 1876 Christie, James M., Bunnyside, Preston-kirk
 1846 Christie, John, 10 Pittville Parade, Cheltenham
 1872 Christie, John, of Cowden, Dollar
 1874 Christie, John, Kirktonbarns, Tayport
 1861 Christie, P., Mains of Scotsraig, Tayport
 1857 Christie, T. C., of Bellar, Chryston
 1884 Christie, Wm., Ardvich Lodge, Liberton
 1871 Chrystal, George, Engineer, Perth
 1878 Chrystal, William, Gulchristland, Thornhill
 1855 Church, D. M., 27 Minto Street, Edinburgh
 1838 Church, J., Parkrose, Canonbie
 1850 Clapperton, James, Garvald Mains, Prestonkirk
 1864 Clapperton, John, Gillsland, Spylaw Road, Edinburgh
 1877 Clark, Andrew, Taly
 1869 Clark, Archd., Bencorram, Dunoon
 1853 Clark, Archd., Inverchapple, Kilninn
 1838 Clark, Francis William, of Urra, Aros
 1864 Clark, James, Kirklandhill, Dunbar
 1884 Clark, James, M.R.C.V.S., Abbeyhill, Coupar-Angus
 1887 Clark, James, 401 Parliamentary Road, Glasgow
 1884 Clark, James, Burnside, Newton Mearns
 1857 Clark, John, late Flender, Busby
 1884 Clark, J. M., Featherstone Castle, Haltwhistle
 1869 CLARK, Sir John F., of Tillypronie, Bart., Tairland
 1872 Clark, John M., Kinchyle, Fitzjohns Avenue, London
 1867 Clark, Lachlan, Tangy, Campbeltown
 1869 Clark, Matthew, late Croftengen, Alexandria
 1872 Clark, M., of Little Culmain, Crockettford, Dumfries
 1871 Clark, Robert, Taybank House, Errol

Admitted

- 1854 Clark, S. T., Chapelhill Hawick
 1850 Clark, Thomas Oldhamstocks Mans,
 Cuckhams-path
 1854 Clark, William, Netherley Farm, Cath
 cart
 1873 Clark, William, New Mousen, Del
 fort
 1857 Clark, William, Shawhill Monkton
 1871 Clark, William, Rosethan Castle,
 Middleton, Cork
 1851 Clark, W. A., Cruthersland, East Kil
 bride
 1853 Clarke, G. G., Erriboll, Lang
 1859 Clarke, John Maryland, Uddingston
 1853 Clarke, Lieut Col Montague A.,
 Achersreith Nunn
 1873 Clarke, William, Hopewell, Tairland
 1873 Clarke, Alex., Prett-Mill Thankerton
 1854 Clay, John, Kirccheaters Kelso
 1870 Cleghorn, Hugh, M.D., of Stravathy, St
 Andrews
 1853 Cleghorn, Thomas Craighur Liberton
 1875 Clelland, James, Ballygreen Dalmple
 1877 Clench, Fred (Messrs Robey & Co.),
 Lincoln
 1876 Clark, Sir George Douglas of Pennauk,
 Burt Pennauk
 1875 Clerkson, Alexander, (Armstrong Villa,
 Kirknewton
 1854 Clinton, W. E. Pellam Moorcourt,
 Stroud—Fr. J. W. M. r
 1871 CLINTON, R. H. N. L. D. Fettercairn
 House Fettercairn
 1850 Clouston, Peter, 1 Park Terrace, Glas
 gow
 1852 CLUTE, Sir Peter of Auchendrine,
 Ayr
 1877 Cochran, Robert, Cildons, Stoneykirk,
 Stranraer
 1852 Cochran, William Overdale, Dun
 blane
 1855 Cochran, William, Auchentubbert, Sand
 head Stranraer
 1850 Christine Adam L., of Kingsknowes,
 Glasgow
 1855 Cochran, James, Waterside Lodge,
 Newburgh, Aberdeen
 1857 Cochrane, James, Eglinton Hotel Dal
 mellington
 1852 COCHRANE Hon Thomas
 1855 COCHRANE Sir Thomas Edward, of
 Crawford, Burt Alington
 1854 Colbe, Gordon, Knappack, Banchory
 Ternan
 1856 Colbe, William, Priestwells Instch
 1853 Collier, John, Hutton House, Car
 noustie
 1877 Collier, Wm. D., of Carmiston, Biggar
 1859 Colquhoun, Dupril, Manager, Vitrail
 Works, Carnoustie
 1873 Colquhoun, George, Shemore Luss
 1872 COLQUHOUN, Sir James, of Luss, Bart,
 Bessie Luss
 1850 Colquhoun, J., Corkehill, Pollok
 shaws
 1874 Colquhoun, Rev J. E. Campbell of Kil
 lermont, Letimeroch Dunblane
 1872 Colthart, Robert, Achaten, Strontian
 1851 C. LITTLE of Cult as Right Hon Lord,
 K. T., 41 Eaton Place London
 1871 Colvin, James E., Wester Manbeen,
 Elgin
 1878 Common, James, Waterbeck Eccle
 fechan
 1878 Common, John, Bridgemuir, Lock
 erbie
 1871 Comrie, Alexander, Albany Terrace,
 Rothessay
 1874 Conacher, P. W., Gallin Cottage, Glen
 Lyon, Aberfeldy

Admitted

- 1873 Cunningham, W. J. C., late High Street,
 Haddington
 1877 Connal, Sir Michael, of Parkhall, Kill
 earn
 1850 Connal, William, Solsguth, Dollar
 1873 Connell, J. W. F., of Auchencheyne,
 Thornhill
 1877 Connachie, William Dixon, V. S., Sel
 kirk
 1860 Constable, James, of Glencraig, Loch
 gelly
 1871 Cook, Charles, 17 Golden Square, Aber
 deen
 1854 Cook, Charles, W. S., 61 Castle Street,
 Edinburgh
 1882 Cook, Henry, W. S., 61 Castle Street,
 Edinburgh
 1841 Cook, John, W. S., 11 Great King Street,
 Edinburgh
 1855 Cook, William Home, C. A., 1 Albany
 Place, Edinburgh
 1865 Cooper, Alexander, Solicitor, Elgin
 1854 Cooper, John, Ley Banchory Ternan
 1855 Cooper, John, M. R. C. V. S., Fordyce,
 Portsoy
 1876 Copland, Alexander, Manager Aberdeen
 Commercial Co., Aberdeen
 1877 Coubett, Thos, Police-Overseer Iron
 Works, Shrewsbury
 1853 Cordner, Alex. Muirmore Southend,
 Campbeltown
 1840 Cordner, W. F., Mormond House
 Cortes Lumry
 1878 Cormack, John F. Solicitor Lockerbie
 1850 Corrie, Adam, South Park, Kircud
 bright
 1854 Cossar, Mark, Greenknowe Duns
 1855 Corson, Thomas, Auction Mart Oban
 1864 Cotesworth, Robert, Cannes France
 1876 Coubrough, Wm., Sornfallow, Wiston,
 Biggar
 1856 Coulthart, John Ross of Greenlaw Park,
 Castle Douglas
 1859 Coupar, John, Balmorne Brechin
 1859 Coupar, John Cardno, of Craigeuchler,
 Aberdeen
 1852 Couper, James, Chemical Manufacturer,
 Craighorth Stirling
 1856 Countess, William, Portobello Farm,
 Trumant
 1865 Cusum, George, 140 Princes Street,
 Edinburgh
 1864 Cusland, James (late Banker, Denny),
 Glasgow
 1855 Cuvette, William, Banff
 1864 Coventry, Wm., Craighill Crescent,
 Burnside
 1836 Cowan, C., of Logan House, Wester Lea,
 Murrayfield
 1850 Cowan, Charles W., Jr of Logan House,
 Penicuik
 1850 Cowan, George, Mans of Park, Glen
 luce
 1872 Cowan, George, Valleyfield, Penicuik
 1873 Cowan, James, 23 St Vincent Place,
 Glasgow
 1874 Cowan, James, 35 Royal Terrace,
 Edinburgh
 1855 Cowan, John, of Beeslack, Milton
 Bridge
 1879 Cowan, John, W. S., 12 Hill Street,
 Edinburgh
 1879 Cowan, John, Metal Merchant, 65 Albert
 Street, Edinburgh
 1854 Cowan, Richard, St Kilda, Sidmouth,
 Devon
 1861 Cowan, Robert, W. S., 9 Carlton Terrace,
 Edinburgh
 1862 Cowan, Robert, 13 Greenside Street,
 Edinburgh

Admitted

- 1881 Cowan, Walter, Blairhoyle, Stirling
1870 Cowe, George, Balhouse, Carnoustie
1872 Cowe, Peter, Lochton, Coldstream
1870 Cowe, Robert, Old Castles, Churnside
1872 Cowe, William, Butterdean, Grants House
1868 Cowie, Alexander, jun, Darley, Auchterless, Turriff
1884 Cowie, Alex, Crombie Bank, Ellon
1862 Cowie, James, The Elms, Dulwich Common, London, S E
1881 Cowpar, Jas, Over Migvie, Kiriemeur
1862 Cox, George Addison, of Inverossachs, Callander
1882 Cox, George Methven, Beechwood, Dundee
1882 Cox, Jas C, Inverrossachs Callander
1863 Cox, William, of New-ow Dunkeld
1867 Crabb, David, of R C V S, New Aberdour, Fraserburgh
1879 Crabb, Wm, Chemical Works, Sillith, Cumberland
1877 Crabbie, John, of Duncow, Dumfries
1877 Crabbie, John W, jr of Duncow, 33 Chester Street Edinburgh
1886 Craig, Alex, Hunters Lodge, Thornhill
1870 Craig, Daniel, Barr, Banquhar
1882 Craig Hugh, Andoran, Oban
1875 Craig, H V Gibson, W S, Deans Court, Wimbourne
1850 Craig, Jas, 33 Manor Place, Edinburgh
1860 Craig, James, Robroyston, Bishopbriggs
1863 Craig, Sir James H Gibson, of Buccut, Bart, Currie
1882 Craig, John, of Bellfield, Blantyre
1867 Craig, John, Gwelt, Cumnock
1867 Craig, John, Jellyhill, Bishopbriggs
1878 Craig, John, Glencairn, Oban
1879 Craig, John, Innergeldie, Comrie—Free Life Member
1885 Craig, John, South Halls Strathaven
1860 Craig, Josh, of Invercits, Lochrutton, Dumfries
1870 Craig, Robert, Andrie Kukbean, Dumfries
1867 Craig, Robert, Turbert, Lochfyne
1868 Craig, Robert (Francis Lowe & Co), Chapelton, Jamaica
1882 Craig, Robert, Ryesh Im, Dalry, Ayr
1869 Craig, Wm, Laurel Bank, Dumfries
1870 Craig, Wm, Buchley, Bishopbriggs
1877 Craig, Dr William, 7 Bantsheld Place, Edinburgh
1855 Craig, William C, Anneston, Bizar
1875 Craig, William, Implement Maker, Old Meldrum
1880 Craig, Wm, Gwydyr House, Crief—Free Life Member
1873 Crighead, James, Sillyfist, Bervie
1878 Craik, George, Aggreman Mains, Tongland, Ringford
1877 Craik, John, The Bush, Roslin
1863 Craike, Charles (Late Esq, Lochmalen), Australia
1878 Crun, George, Old Morhob, Inverkindie
1876 Crun, James, jun, Knockandoch, Whitehouse, Aberdeen
1871 Cran, John, Kikton, Banchrew, Inverness
1883 Cran, John Butcher, Keith
1872 Cranston, James, Holstane Thornhill
1883 Cranston, Robert, Pathhead, Cockburnspath
1884 Cranston, Stuart, 78 Argyle Street, Glasgow
1881 Craw, Henry Hewat, West Foulden, Berwick
1882 Craw, James, Whitesome Hill, Churnside

Admitted

- 1862 Crawford, Alexander, Netherton, Carmunnock
1858 Crawford, Alex, Writer Duns
1871 Crawford, Andrew, Tavhill, Perth
1860 Crawford, Daniel, late Dykehill, Vilt of Camps e
1861 Crawford, James, Brydekirk Mam Annan
1855 Crawford, James Coutts, of Overto, Strathaven
1854 Crawford, John, Nairn
1877 Crawford, John, High Street, Alloa
1865 Crawford, John, Milnstonford, West Kilbride
1864 Crawford, J W, 26 Hamilton street Greenock
1857 Crawford, P, Carrichan Troqueer
1866 Crawford, R, Buchanan, Inverkeithing
1863 Crawford, Thomas, Dunbarrow Crief
1860 Crawford Wm, Balravie, Perth
1861 Crear, Alexander, Arathur, Kilm
1875 Crear, Donald, Wrenish Kilm
1864 Cieru, Peter C, Brackley, Dilmilly
1861 Crear, John, Drumathery, Dunkeld
1860 Creyke, Dr A, Dalry, Advie, Greenock
1868 Crichton, Hew, S S C, 13 Nelson Street Edinburgh
1849 Crichton, Hew, Hamilton, W S, 10 Nelson Street, Edinburgh
1878 Crichton, James, 47 George Street Edinburgh—Silver Smith to the Society
1847 Crichton, Jas Arthur, Advocate, Sheriff of the Lothians and Peebles to Nelson Street Edinburgh
1870 Crichtley, J A, Statelton Tower, Annan
1872 Croll, John, Coach Works, Kelso
1875 Croll, Robert, Craigcrook Castle Blackhill
1883 Croll, Thos, Drumwhindle Mains Ello
1865 Croll, John, Orchard Park, Broughty Ferry
1858 Crombie, Alex, of Thornton, W S, 137 Princes Street, Edinburgh
1870 Cromarty, Wm, Widewall, St Margaret's Hope
1883 Cross, Adam P, Bowling Green Street Leith
1880 Cross, Alex, 41 Constitution Street Leith
1873 Cross, Alex, jun, Eastbank House Langbank
1861 Cross, David, Eastbank House, Linlank
1858 Cruickshank, Amos, Sittyston Aberdeen
1865 Cruickshank, Andrew, 57 Golden Street Hurly
1873 Cruickshank, David, Vert Elgin
1865 Cruickshank, Edward C, Lethenty Inverurie
1864 Cruickshank, G A, Nether Corton Lunmay
1874 Cruickshank, George, Ardmore Tunn
1876 Cruickshank, James, Ladyford, Perth
1872 Cruickshank, John, Knock Elgin
1875 Cruickshank, John, Dandaleith, Craigellachie
1876 Cruickshank, John W, Elrick House Summerhill Aberdeen
1876 Cruickshank, Wm Woodhead, Carnies, Lomay, Aberdeen
1865 Crum, Alex, Thornhebank House, Thornhebank Glasgow
1876 Cullen, Archibald, Woodend Airdrie
1861 Cullen, William, Lambegs, Glasgow
1879 Cumming, David, Knockie-ton Crief
1863 Cumming, George, Writer, Puff

Admitted

- 1878 Dewar, James, Cairnston, Dunblane
 1879 Dewar, James, Ballihuek, Dollar
 1877 Dewar, Jas. Cumming, of Vogrie, Ford
 1883 Dewar, John E. C., V.S., Kintore
 1884 Dewar, Peter, King's Park, Stirling
 1884 Dewhurst, G. C., of Abercull, Comrie
 1823 Dick, W. G., Horse Hill, Inverness
 1884 Dick, J. P., Killellan Ho., Campbeltown
 1893 Dick, Wm., of Tullymet, Ballinluig
 1882 Dickenson, Robert, Longcroft, Lauder
 1889 Dickenson, Wm., Longcroft, Lauder
 1869 Dickie, Joseph, The Bank House, The Broadway, Tooting, London, S.W.
 1807 Dickie, Robt., Killeunan, Campbeltown
 1870 Dickson, Alex., of Hartree, Biggar, M.D., Professor of Botany, University of Edinburgh
 1854 Dickson, Archibald, of Hassendeanburn, Hawick
 1884 Dickson, George, Braehead, Collin, Dumfries
 1884 Dickson, James, Damhead, Loanhead
 1853 Dickson, James A., Woodville, Arbroath
 1830 Dicks n, James J., C.A., 13 Clarendon Crescent, Edinburgh
 1862 Dickson, John H., Dabton, Thornhill
 1846 Dickson, John W.S., Greenbank, Perth
 1873 Dickson, John F., Panbride House, Carnoustie
 1876 Dickson, Patrick, Laurecokirk
 1870 Dickson, B. A., Merchant, Dumfries
 1860 Dickson, T., Drumcraigh, Thornhill
 1886 Dickson, Thomas Arthur, West Cliff, Preston—*Fre. Life Member*
 1870 Dickson, Thomas Gullie, 3 North St David Street, Edinburgh
 1874 Dickson, W. L., Drummelzier Haugh, Biggar
 1873 Dickson, William Traquair, W.S., 11 Hill Street, Edinburgh
 1851 Dingwall, Wm., Ramornie, Ladybank
 1849 Dixon, Thomas G., Nant Hall, Rhyl
 1806 Dobbie, John, Campend, Dalkeith
 1886 Dobbie, John, Contractor, Leith
 1886 Dobie, Alex., Hittchell, Aunan
 1878 Dobie, David, Banker, Lockerbie
 1878 Dobie, Douglas, Drumcork, Thornhill
 1863 Dodd, Nicholas, Nisbet, Jedburgh
 1863 Dodd, James, Handalee Cottage, Jedburgh
 1857 Doddrell, George J., Crosshill Farm, Ruthrielen
 1865 Dudda, James, Allandale, Bridge of Allan
 1877 Dudds, Samuel, Summerfield, Haddington
 1863 Dudds, William, Elwartlaw, Greenlaw
 1871 Dug, John, Agricultural Implement Maker, Errol
 1880 Du Har, Thomas A., V.S., 56 New Bond Street, London
 1877 Donald, Andrew, Pittal, Penicuik
 1886 Donald, Archibald, Auchenbrack, Thornhill
 1855 Donald, Jas., Whitemyres House, Old Skene Road, Aberdeen
 1877 Donald, John, 10 Bristo Place, Edinburgh
 1876 Donaldson, Alex., 54 Avenue Wagram, Paris
 1885 Donaldson, Rev. John, Kirkconnel House, Sanquhar
 1855 Donaldson, George, Ladyshridge Asylum, Banff
 1883 Donaldson, Harry Tulloch, Banker, Nairn
 1871 Donne, Henry, Leck Woodten, Warwick
 1865 Dougall, Andrew, Railway Manager, Inverness

Admitted

- 1857 Dougall, Vice-Admiral W. H. Maitland, R.N., of Scotsagraig, Tayport
 1885 Douglas, Alex., Gray, Ballinluig
 1868 Douglas, Archibald C., of Mains, Milngavie
 1868 Douglas, Arthur Henry Johnstone, of Lockerbie, Comlongan Castle, Ruthwell
 1866 Douglas, E. O., of Killiechassie, Aberfeldy
 1887 Douglas, Sir George Brisbane Scott, of Springwood Park, Bart., Kelso
 1871 Douglas, George, Upper Hindhope, Jedburgh
 1867 Douglas, G. S., 5 Abbotsford Grove, Kelso
 1884 Douglas, James, Cunsland, Dalkeith
 1883 Douglas, Gen. Sir John, K.C.B., of Glenhamart, Arvenhauy, Greenock
 1883 Douglas, John, Argyll Arms Hotel, Campbeltown
 1873 Douglas, John, Marionburgh, Ballindalloch
 1861 Douglas, Thomas, Mains of Rhynie, Fearn, Ros-shire
 1872 Douglas, Thos., 5 Charlotte Square, Newcastle
 1874 Douglas, William, Arbol, Fearn
 1865 Douglas, William, 29 Grassmarket, Edinburgh
 1878 Douglas, William D. Robinson, of Orchardton, Castle-Douglas
 1854 Douglas, Alex. Forbes, Haddo House Mains, Aberdeen
 1864 Douie, John E. L., Factor, Polmaise, Stirling
 1879 Dow, David, Balmanno, Bridge of Earn
 1879 Dow, David, jun., Balmanno, Bridge of Earn
 1879 Dow, James, Clathyheg, Gask, Auchterarder
 1883 Dowall, J. P., Kelly Dieachfield, Wornayhills, Arbroath
 1853 Dowell, Alex., 18 Palmerston Place, Edinburgh
 1883 Downie, C. G., 1 Adelphi, Aberdeen
 1860 Downie, Jny, Corstorphine
 1867 Downie, Wm., Kinbroom, Rothie Norman
 1857 Drennan, James, Auchinlee, Ayr
 1872 Drever, James, Swannay House, Finstown, Orkney
 1870 Drew, James, of Craigenallie, Doonhill, Newton-Stewart
 1837 Drife, James (late Barr, Sanquhar), New Zealand
 1861 Dron, William, Crieffvechter, Crieff
 1861 DRYMOND, Hon. Francis, 36 St George's Square, London, S.W.
 1878 Drummond, James, jun., Blacklaw, Dunfermline
 1850 Drummond, Henry, Seedman, Stirling
 1864 Drummond, John, of Balquhundy, late Gullion Rectory, Wingham, Kent
 1832 Drummond, J. M., of Megginch, Errol
 1855 Drybrough, Andrew, 36 Drummond Place, Edinburgh
 1856 Drybrough, Thos., 31 Royal Terrace, Edinburgh
 1869 Dryburgh, J., Kininmonth, Cupar-Fife
 1863 Dryden, W., Land-Steward, Springwood Park, Kelso
 1881 Drysdale, A. L., Kinswood, Murthly
 1878 Drysdale, David, Lons Hill, Alloa
 1864 Drysdale, Henry, Begbie, Haddington

Admitted

- 1864 Drysdale, John Grange of Elcho, Perth
 1878 Drysdale, Robert, Old Mills, Craigforth, Stirling
 1861 Drysdale, Wm of Kilrie, North Pitheadie, Kinghorn
 1870 Dudgeon, Alexander, East Dalmeny, Edinburgh
 1869 Dudgeon, George, Almondhill, Kirkliston
 1850 Dudgeon, James, Upper Keith
 1840 Dudgeon, John, 15 Chalmers Street, Edinburgh
 1862 Dudgeon, J Scott, Longnewton, St Boswells
 1856 Dudgeon, John B, Craik, Loth
 1861 Dudgeon, Patrick, of Cargen, Dumfries
 1877 Dudgeon, Robert F, yr of Cargen, Woodhouselee, Canonbie
 1866 Duff, Hon George Skene, Montcasser House, Banff
 1874 Duff, G Smythan, Heatherley, Inverness
 1868 Duff, Col James, Knockleith, Turfiff
 1875 Duff, James, Factor, Blackwood, Lesmahallow
 1865 Duff, James, Freehold, Bridge of Earn
 1864 Duff, G A of Hatton Turfiff
 1858 Duff Lachlan Duff Gordon, of Drummuir Keith
 1866 Duff Robert W, of Fetteresso, M P, Stirling
 1874 Duff Thomas, Manor House, Sidmouth, Devonshire
 1850 Duff Thomas Gordon Park House, Lanark
 1875 Dundas P of Caumachmore Aberdeen
 1881 Duke William Newlands, Annemuir
 1860 Dunn Finlay, 130 George Street, Edinburgh
 1864 Dunn George, Balgonie, Abernethy, Newburgh
 1871 Dunn, John Gilshies
 1869 DUNN Sir Archd, of Northfield, Birt, Duff House, Elgin
 1878 Dunbar, Garden Duff, of Hempriggs, Ackerhill Tower Wick
 1845 DUNBAR Sir William, of Mochrum, Birt, 30 Prince's Gardens, London, S W
 1876 Dunbar William, Union Bank Turfiff
 1861 Dunn, Alex Knivesington Glasgow, Oakham Putland
 1857 Duncan, Alex, Craigfoode Cupar Fife
 1873 Duncan, Alex, Duart, Auchnacraig, Mull
 1868 Duncan, Alexander, Bridge of Dee, Aberdeen
 1876 Duncan Alex R of Parkhill, Blurgrove, Strithbungie
 1861 Duncan James, yr of Auchendowie, Kirkcubright
 1863 Duncan James (late Kilbuckin, Pinnock) New Zealand
 1860 Duncan in James, P Nalthe Mill, Carnoustie
 1871 Duncan, James, of Denmore Kilmar
 1876 Duncan, James, Launatyre Mans, Rothes
 1868 Duncan Jis Dalrymple, Writer, 211 Hope Street Glasgow
 1871 Duncan John, yr of Bankell, St Andrews
 1879 Duncan John (of Dullatur), Tilney, St Laurence Kings Lynn
 1858 Duncan, John Aird, Methlick
 1861 Duncan, John, Auchendowie, Croy
 1877 Duncan, John, Fortrie, King Edward, Banff
 1883 Duncan, John, East Memus, Kirriemuir

Admitted

- 1883 Duncan, John, Kirkcubright, Croy
 1885 Duncan, John Logie Duino Pitcairne
 1883 Duncan, John W, Boghall, Kingsburn
 1878 Duncan, Patrick, Balchairs, King Edward, Banff
 1879 Duncan, Patrick Geekie, East Memus, Kirriemuir
 1884 Duncan, Peter, Eskbank, Dalkeith
 1856 Duncan, Robert, of Kirkcubright, Croy
 1868 Duncan, R, Auchendowie Mans, Banff
 1882 Duncan, Robert, Brockwellman, Dunlop, Ayrshire
 1881 Duncan, Robert, Royal Hotel, Tigh na Bruich
 1883 Duncan, Robert, Banff
 1861 Duncan, Thomas, Dullatur, Cumbernauld
 1885 Duncan, Tios L, Pusk Leuchars
 1866 Duncan, William, 59 C, 13 Abercromby Place Edinburgh
 1876 Duncan, William, 18 York Place, Edinburgh
 1867 Duncan, William, Welton, Veigle
 1861 Duncan, Walter Geekie, Birkcraik, Leith, Dundee
 1876 Dundas, Chas Henry, Dumfries, Chief Dundas, Commander Colin M, of Ochtertyrie, R N Stirling
 1862 Dundas David, Advocate, 46 Heriot Row, Edinburgh
 1875 Dundas, Ralph W S, 16 St Andrew Square, Edinburgh
 1867 Dundas Robert, of Alnston, Gorefield
 1880 Dundas T G, of Canon Hall, Lurbeith
 1860 Dundas Wm John C S, 16 St Andrew Square Edinburgh
 1857 Dunlop, Alexander, Glasgow
 1876 Dunlop Colin Robert, of Quarter Hamilton
 1863 Dunlop, Gabriel, Castle Farm, Stewarton
 1873 Dunlop, George, W S, 20 Castle Street, Edinburgh
 1864 Dunlop, Captain H L Murray, of Corsock Dalbeithie
 1875 Dunlop, Quintin M Alnston, Myholc
 1871 Dunlop, Robert Alnston Kilmar
 1863 Dunlop, Wm H, of Annanhill, Kilmar
 1862 DUNLOP Right Hon the Earl of Isle of Harris Invernesshire
 1890 Dunn, Andrew jun, Rossett Kelso
 1864 Dunn, Jas, Blanshie, Lunder
 1876 Dunn, John Ramsay Lodge, Kelso
 1877 Dunn, William The Gardens Dalkeith
 1880 Dunn Robert, Blue Bell Hotel, Bedford
 1873 Dunn, William, Kenmore Mans, Aberdeen
 1866 Durne, David, Nether Mill, Fettercairn
 1864 Durne, John, Inverness
 1873 Durne, James, Jackson, Ruthie Nor
 1866 Durne, John, Lambhill, Inverness
 1874 Durne, John Sunnyside Ruthie Nor
 1865 Durne, Leslie Mans of Gluck, Old Meldrum
 1860 Durne, John, Lumb, Corguiff, Strath
 1868 Duthie, William, Banker, Taries
 1876 Dykes James, Luncheon, Fencub
 1863 Dykes, John, jun, 92 St Vincent Street, Glasgow
 1867 Dykes, Thos, Bent, Leamnahagow
 1884 Dyson, Fred W, Peebles
 1882 Dyson, Thos C of Willowfield, Halifax, Yorkshire

Admitted

- 1871 Eass n, David, Camperdown Dundee
 1871 Eden, Henley, Wooley Park, Wakefield
 1874 Edgar, John, Kirkcaldy, Roslin
 1884 Edington, Peter, Thornhill Muthill
 1877 Edmond Alex jr of Kingswells, Garthdee, Aberdeen
 1869 Edmond, David of Ballochrum, Balfron
 1881 Edmond, John, Gillingmuir, Bannockburn
 1873 Edmond, Wm, Cowie Bannockburn
 1873 Edmond, William, Hillhead of Catter, Drymen
 1878 Edmonds, Leonard London
 1884 Edmondson Jas H, of Riddingwood, Amisfield Dumfries
 1878 Edmondson, Thomas, 144 Princes street, Old Garratt Manchester
 1875 Edmonston, Mrs of Bunes Lerwick
 1873 EDMONSTONE, Admiral Sir William, of Duntreath Burt Strathblaine
 1850 Edwards Matthew late Hilton Alloa
 1803 EDMUNTON and WYTON Right Hon the Earl of Eglinton Castle Irvine
 1884 ELCHO Right Hon Lord, M P, Gosford, Longmuddry
 1881 Elider H East Berford, Haddington
 1881 Elder Hugh, Grain Merchant, Dunfermline
 1877 Elder James, Roddun, Currie
 1854 Elder Thomas, Wedderburn Mains, Edrom
 1854 Elder, William, Tweedmouth Implement Works, Berwick on Tweed
 1873 Elie, Rev Dr Wm Henry, Etchingham Rectory Hawkhurst, Kent—*Free Life Member*
 1875 ELGIN and KINCARDINE, Right Hon the Earl of Broomhall Dunfermline
 1874 ELIBANK, Right Hon Lord, Minden, Eddleston
 1875 ELLENFIRE Right Hon the Earl of, Worsley Hall Manchester
 1869 Elliot, A T, Newhall Galashiels
 1863 Elliot, Henry, Greenriver Hawick
 1853 Elliot, James, Galahall, Kelso
 1850 Elliot, James, Burnhead, Hawick
 1875 Elliot, James T S, of Wolfelee, Hawick
 1880 Elliot, John, of Bunka, 7 Chamberlain Road Edin
 1863 Elliot John The Flat Newcastleton
 1874 Elliot, Matthew Flecker, Inverness
 1848 Elliot Robert, East Ainslie, Jedburgh
 1884 Elliot, Robert, Burnmouth, Newcastleton
 1874 Elliot, Robert Henry, of Clifton Park, Kelso
 1854 Elliot Thomas, Blackhaugh, Galashiels
 1873 Elliot, Prof Thos John Eastnor, Ledbury—*Free Life Member*
 1884 Elliot Walter, Whitlaw, Lanter
 1860 Elliot, Walter, Hollybush Galashiels
 1866 Elliot, Walter, Hermitage, Newcastleton
 1884 Elliot, Walter, Ardormash, Oban
 1887 Elliot, William Auction Mart Lanark
 1872 Elliot, William B, of Benrig, St Boswells
 1884 Elliot, William, Ellemford, Duns
 1884 Ellis, John Mosses, Femeuch
 1880 Ellis, O W (Robey & Co), 26 George Street Edinburgh
 1869 ELPHINSTONE, Right Hon Lord, Carberry Tower, Musselburgh
 1867 ELPHINSTONE, Hon Edward Fras Bulmer, Comrie Castle, Dunfermline

Admitted

- 1882 Ensor, Thos Henry, 54 South Street, Dorchester—*Free Life Member*
 1878 Erskine, Charles, Chiefswood, Melrose
 1874 Erskine, Henry, Buccleuch Square, Langholm—*Free Life Member*
 1863 Erskine, H D, of Cardross, Stirling
 1862 Erskine, J E, of Lunlathen, Broughty Ferry
 1877 Erskine, Rear Admiral James E, of Venlaw Peebles
 1859 Erskine, Vice Admiral John E, The Albany London
 1800 ERSKINE, Sir Thomas, of Cambo, Bart, Chail
 1862 Eason Robert Beltonford Dunbar
 1875 Ewart H Tynninghame Pictou
 1848 Ewen Robert West Town, Inverl
 1857 Ewin, Alex Crum, of Keppoch Cardross
 1851 EWING Sir Archd Orr of Balhakinram, Bart M P Killarney
 1882 Ewing Archd Ernest Orr, Cardross House Stirling
 1856 Ewing, Francis, Bank Agent, Milnathort
 1857 Ewing, Humphrey, Ewing Crum of Strathleven Ardencaple Castle Helensburgh
 1886 Faber, Alfred Dennis Belmont, Ilfracombe—*Free Life Member*
 1868 Fair, Frederick late St Andrews
 1863 Fair, John S Elliot Wells, Jedburgh
 1884 Fairbairn, J J, Greenend St Boswells
 1864 Fairholme, Geo K. Erskine, of Old Melrose
 1884 Fairweather, John, Chapelton Brechin
 1836 Falconer, Donald, Milton or Conon, Arbrogath
 1873 Falconer Wm Cairnton Fordoun
 1850 FALSHAW Sir James, Bart 14 Belgrave Crescent, Edinburgh
 1886 Farish, James, West Mains Dumfries
 1860 Farish, Samuel, Kirkland Lockerbie
 1877 Farish, Samuel T, Kirkland Lacherbie
 1877 Farish, Wm R, Timwald Parks, Dumfries
 1884 Farmer, A F, of Brownhills, St Andrews
 1864 Farmer Robert, of Kinross St Andrews
 1862 Farquhar Arthur Ws Greenbarbour Cuthrie, Cove, Aberdeen
 1880 Farquhar James, Old Echt, Echt
 1857 Farquharson Alexander, Greenburns, Coupar Angus
 1865 Farquharson Colonel James Ross, of Invercauld, Bute
 1865 Farquharson, J, 4 Bridge Street, Aberdeen
 1871 Farquharson, James, East Town, Tarland
 1843 Farquharson, Major General Francis
 1857 Farquharson, Robert O of Haughton, Aford
 1858 Farrell, Alfred Herbert William, Davo House, Fordoun
 1874 Fell, John Duncan Flesher, Blairgowrie
 1877 Fennesy, Thos, Grange Villa, Waterford, Ireland
 1871 Fenwick, James, Factor, Redgorton, Perth
 1874 Fergus, William 1 Queens Place, Leith Walk, Edinburgh
 1884 Ferguson, A 257 Duke Street Glasgow,
 1882 Ferguson, Alexander Robertson, Writer, Neilston

Admitted

- 1876 Ferguson, Archd. A., 21 Duddingston Park, Portobello—*Free Life Member*
 1872 Ferguson, Lieut.-Col. George A., of Pitfour, Minlaw
 1885 Ferguson, George A., Lessendrum, Drumblade
 1884 Ferguson, David, Burleigh, Kinross
 1879 Ferguson, James, Balunie, Coupar-Angus
 1863 Ferguson, John, Burghlee, Loanhead
 1855 Ferguson, John Lossiemouth
 1882 Ferguson, J., Duns Castle Estate Office, Duns
 1870 Ferguson, John, Seed Merchant, Sanquhar
 1879 Ferguson, John, Kipperoch, Dunbarton
 1875 Ferguson, Peter, Rock Cottage, Renfrew
 1882 Ferguson, Ronald C. Munro, of Raith and Novar, M.P., Raith House, Kirkcaldy
 1858 Ferguson, Thomas, Kinochtry, Coupar-Angus
 1868 Ferguson, Thomas, 46 Don Street, Old Aberdeen
 1870 Ferguson, Wm., of Kinnundy, Aberdeen
 1879 Ferguson, W. S., Pictston Hill, Perth
 1879 Ferguson, Donald, Dalcapon, Ballinlurg, Perthshire
 1854 FERGUSON, Right Hon. Sir James of Kulkerran, Bart., M.P., Maybole
 1862 Ferguson, Sir James Ranken, of Spitalhaugh, Bart., West Linton
 1878 Ferguson, Ninian, Sanquhar
 1836 Ferguson, Samuel R., of Middlehaugh, Pitlochry
 1878 Ferguson, Wm., Donkins, Ecclefechan
 1870 Fernie, Charles, late Blackhall, Tulliallan, Kincairdine-on-Forth
 1869 Fernie, George, Leigham Lodge, Roupell Park, Streatham Hill, Surrey
 1875 Fernie, James A., Hilton, Alloa
 1853 Fernie, J. C., Union Club, St Andrews
 1884 Field, Rev. Edward Burch, of Moreland, 12 Douglas Crescent, Edinburgh
 1884 FIFE, Right Hon. The Earl of, K.T., Duff House, Banff
 1879 Findlay, James Smith, Balvenie, Dufftown
 1884 Findlay, John, Springhill, Baillieston
 1855 Findlay, Robert, of Springhill, Baillieston
 1860 Findlay, Robert Elmsall, of Boturich, Alexandria, N.B.
 1847 Findlay, Thomas Dunlop, Easterhill, Glasgow
 1857 Findlay, W., Brackenbrae, Bishopbriggs
 1855 Finlay, C. Campbell, of Castle Toward, Greenock
 1879 Finlay, John, Lochend, Lochgelly
 1840 Finlay, John H., W.S., 13 Castle Street, Edinburgh
 1870 Finlay, Kirkman, of Dunlosait, Portaskig, Islay
 1835 Finlayson, James, Balcathie, Arbroath
 1862 Finlayson, John, Harperstone, Biaco, Perthshire
 1873 Fisher, Donald, Jellyholm, Alloa
 1861 Fisher, Donald, The Hotel, Pitlochry
 1870 Fisher, John, Knells, Carlisle
 1861 Fleming, Alex., Raith, Bothwell
 1882 Fleming, Andrew, Calla, Carnwath
 1881 Fleming, Rev. A., of Inchyra, Hamilton House, Perth
 1867 Fleming, David, Avonmill, Hamilton
 1876 Fleming, David Gibson, Ardullie, Dingwall
 1878 Fleming, Gavin, Crowdie Knowe, Ecclefechan

Admitted

- 1868 Fleming, George, Haugh, Kirkcriston
 1861 Fleming, Hugh, Felmersham, Bedford
 1832 Fleming, James, Muirside, Carmunnock
 1854 Fleming, James (late Three-Mile-Town, Linlithgow), Glasgow
 1864 Fleming, James, Carmuir, Falkirk
 1882 Fleming, James S., Royal Bank of Scotland, Edinburgh
 1884 Fleming, John, Roan, Newcastleton
 1877 Fleming, John, Ploughland, Strathaven
 1865 Fleming, John, Bombay
 1870 Fleming, John, Meadowbank Cottage, Strathaven
 1876 Fleming, J. B., of Beaconfield, 241 St Vincent Street, Glasgow
 1882 Fleming, Wm., Windlaw, Carmunnock
 1863 Fleming, Wm., Fulwood Mains, Linwood
 1867 Fletcher, Angus, Auchtertyre, Tyndrum
 1857 Fletcher, Archibald, Auchtertyre, Tyndrum
 1870 Fletcher, Bernard Jas. Cuddon, of Dunans, Colntraive, Argyllshire
 1884 Fletcher, D. M., Drumelzier Place, Biggar
 1843 Fletcher, Major C. E., late of Corssock
 1837 Fletcher, J., of Salton, Tranent
 1884 Fletcher, J. D., of Rosehaugh, Avoch
 1873 Fletcher, John, Dolphington, Cramond Bridge
 1869 Flint, David, Drylaw Mains, Davidson's Mains
 1861 Flockhart, J., Banker, Collinsburgh
 1884 Flockhart William, of Annacroich, Kinross-shire
 1883 Flower, Chas. E., of Glencasslay, Rosehall, Southlandshire
 1865 Foggo, Robert Gordon, Invercauld Office, Ballater
 1873 FORBES, Right Hon. Lord, Castle Forbes, Kelg
 1870 Forbes, Alex., Stralochie, Dunkeld
 1870 Forbes, Arthur Drummond, Millearne, Auchterarier
 1856 Forbes, Charles William, Sandecotes Parkstone, Dorset
 1870 Forbes, Chas. W. L., Aberfeldy
 1830 Forbes, George, Merchant, London
 1865 Forbes, Duncan, of Culloden, Inverness
 1862 Forbes, James Ochozar, of Corse, Lumphannan
 1874 Forbes, James, Tombreck, Glenbucket, Aberdeen
 1842 FORBES, Lieut-General Sir John, of Inverern, K.C.B., Strathdon
 1873 Forbes, John, Pitellachie, Coldstone, Dinnet, Aberdeenshire
 1885 Forbes, W., of Medwyn, 17 Ainslie Place, Edinburgh
 1800 Forbes, William, of Callendar, Falkirk
 1883 Forbes, William, Ruthven, Dinnet, Aberdeen
 1878 Ford, George, Saughton Hall Mains, Murrayfield, Edinburgh
 1849 Ford, Wm., Fenton Barns, Drem
 1873 Ford, William, of Ferneyside, Liberton
 1863 Fordyce, James Dingwall, of Culah, Advocate, 84 Great King Street, Edinburgh
 1871 Forgan, Andrew, 14 Claremont Terrace, Edinburgh
 1878 Forgan, James, Sunnybraes, Largo
 1803 Forman, John (Duncrahill), 51 Great King Street, Edinburgh
 1852 Forman, Robert, late Keith House, Upper Keith
 1857 Forrest, David, of Treesbanks, Shotts
 1890 Forrest, George, Edston, Stobo, Peebles
 1843 Forrest, James, jun., Kirriemuir

Admitted

- 1867 Forrest, John Clark, of Auchencrath,
Hamilton
1868 Forrest, Peter, of Hairmyres, Shotts
1864 Forrest T M Edston, Stobo
1868 Forrest, William, of Lamluan Hamilton
1882 Forrester, John, Builder, 39 Broughton
Place, Edinburgh
1872 Forsyth, Jas (Hooper & Co), Kelso
1874 Forsyth, Jas Noel Muller, of Qumish,
Tobermory, Mull
1878 Forsyth, John Ruffer Park, Sorbie
1855 Forsyth, John, Auchoyle, Paikhill
1873 Fortescue Archer, of Swanbister and
Kingscouse Aberdeen
1884 Fortescue, W I, Swanbister, Kirkwall
1857 Fortune George Barnsmuir Crail
1875 Foulis, A R, of Clerkland Stewarton
1877 Foulis, David, 61 George Street, Edin-
burgh
1869 Foulis, Sir James Liston, of Colinton,
Bnt, St Andrews
1871 Foulis, Dr Robert, of Cannie Lodge,
Cupar Rife
1883 Fowler J A, jr, of Briemore, Inver-
broom House, Garve N B
1866 Fowler, Henry Mackenzie, of Raddury,
Fortrose
1874 Fowler, William of A-leed Tarriff
1885 Fowlie, James Brucehill New Deer
1849 Fox Michael jun, late Glencourse
Wains, Penmunk
1838 Fox Richard M, of Foxhall, Rathoven,
Ireland
1870 Fox Wm, The Abbey St Bees
1872 France, C B, 68 Leslie Terrace, Aber-
deen
1867 France, Robert Jeaniebank House,
Bridge of Allan
1874 Fraser, Alex, Commercial Bank Inver-
ness
1857 Fraser, Alexander, Solicitor, 22 Union
Street, Inverness
1868 Fraser Alex (Nell & Co), Commonmills
Lodge Edinburgh
1883 Fraser, David, Dalnairn, Inverness
1884 Fraser, Duncan, The Hotel Dalnally
1840 Fraser Evan Bailie, Redburn, Inver-
ness
1869 Fraser Colonel Fred Mackenzie, of
Castle Fraser Aberdeen
1885 Fraser George, Hill of Skillically,
Ellon
1873 Fraser, H Newby Tembam, Grey Town
King William's Town, Cape Colony
1873 Fraser Hugh, Balloch of Culloden, In-
verness
1856 Fraser Hugh, late 29 Arundell Gardens,
Kenington Park, London
1874 Fraser James, C E, Inverness
1874 Fraser, James, Mauld, Beauly
1877 Fraser, James, late 6A Bristo Place,
Edinburgh
1840 Fraser John (late Cromarty House),
London
1865 Fraser, Capt John, of Dalrum, Faria-
line Stratherrick, Inverness
1886 Fraser John G, Easter Kanchie, Fearn,
Ross-shire
1879 Fraser, John M. (Macdonald & Fraser),
Perth
1854 Fraser Patrick Allan, of Hospitalfield,
Airthroth
1863 FRASER, Hon Lord, 8 Moray Place,
Edinburgh
1839 Fraser, Robert, Brackla, Nairn
1880 Fraser, W S, Bunker Dinnoch
1852 Fraser, William, of Kilmur and Newton,
Nairn
1851 Fraser, Wm, Greenhill, Dunung
1853 Fraser, Wm, Annfield, Inverness

Admitted

- 1850 Fraser, John, Maxwellfield, New Abbey,
Dumfries
1857 Frederick, D, of Gass, Dumbredden,
Stranraer
1869 Frederick, Robert Drumflower, Dun-
bart
1877 Frederick, Thomas Cairnhandy, Stony-
kir, Stranraer
1868 Freeland, Jas, Broadrate, Strathblane
1850 Finch, James, Northjeet, Fredericks-
haven, Denmark
1877 French, James, Mountheirick, Abington
1867 Fiew, Thomas, 6 Windsor Terrace, St
George's Road, Glasgow
1854 Friar, Thomas, of Gindon Ridge, Nor-
thampton-Tweed
1875 Frier, Matthew, Kidston Mill, Peebles
1879 Fullarton, James, Balgove, Coupar-
Angus
1884 Fulton John, Hatthednize, Coldstream
1847 Fyfe, John, late of Dalmainock Glas-
gow
1861 Fyfe, Robert, Pitonochie, Dunfermline
1875 Fyfe, William, late Forfar
1879 Fyfe, James, junior, Creaton, Mark-
inch
1877 Fyfe, Peter, Wamphray North Berwick

1866 Gardner, Chas, Union Bank Glasgow
1873 Gairshan, Chas C, Saddler, Alloa
1872 Galbraith, John, Edentaggart, Luss
1880 Galbraith John, Croy Cunningham,
New Killearn Station
1873 Galbraith, Thos L, Town Clerk, Strling
1881 Galbraith, William W, Croftfoot, Gart-
cosh, Linarkshire
1853 Gilie, Chas R Ballicary, Inverness
1860 GILLOWAY, Right Hon the Earl of,
Galloway House, Gulliestown
1874 Galloway, Alex, C E, Aberfeldy
1884 Galloway, Thos I, Cannie, Glencaire,
Perth
1859 Gamble, John, late 1 Great Winchester
Street Buildings, London E C
1884 Gammell, Col J H H, of Lethendy,
Mirkleom
1859 Garden Arch, of Bernery Forres
1882 Guden, James Murray, Advocate, Aber-
deen
1874 Garden, Robert, North Ythan, Larves
1857 Garden William, late Paisous Pool,
Dumfries
1859 Gudiner, Patrick, Newhuggin, Auchter-
arder
1861 Gardiner, R, of Rotterams, The Priory
Auchterarder
1857 Gardner, George, Carrington Buns,
Galloway
1885 Gardner, James, of Menkellhill, Kirk-
caldie
1880 Gidner, Peter, Dunmore Pottery, Star-
ling
1853 Gardner, Robert, Gattonside, Melrose
1855 Gardner, Robert, Whitburn
1877 Gardner, Wm, East Langton, Mid-
Culder
1867 Gaidyne, Col C G, (of Finavon), Glen-
ferry, Mull
1883 Garioch, Peter, 1 Stirling Street, Aber-
deen
1884 Gaine, John, Great Russington, R S O.,
Gloucestershire
1886 Gason, William, Solicitor, 21 Hill
Street Edinburgh
1883 Garvie, Robert Glegg (Ben Reid & Co),
Aberdeen
1859 Gaskroger, G, Southfield, Longniddry
1886 Geddes Alexander, of Blairmore, Glass,
Huntly
1837 Gekie, Alex, of Baldowrie, Coupar-
Angus

Admitted

- 1573 Gekkie Peter, Barclay Hill, Perth
 1571 Gekkie Robert, yr of Baldowie, Rose
 mount Blairgowrie
 1544 Gell J E, of Dumbuck
 1577 Gell H Chandos Pole, Hopton Hall,
 Wicksworth
 1556 Gellatly, William, Seed Crusher, Dun
 dee
 1575 Gemmell, Andrew, Legtonridge, Perth
 1575 Gemmell, Gilbert C, Upper White
 haugh, Muirkirk
 1575 Gemmell, John, Giespinside, Douglas
 1553 Gemmell, William Braidwood, Grole
 bridge
 1571 Gibb, David, Balmouth, Pittenweem
 1575 Gibb, John, Fairbrae, Carnwath
 1578 Gibb, Robert Shirra, Boon, Lauder—
Free Life Member
 1569 Gibbons, Thomas, 24 Cheswick Street,
 Carlisle
 1571 Gibson, Charles, Pitlochry
 1575 Gibson, Francis, Oatfield, Drem
 1576 Gibson Henry John, Kinty, Foveran,
 Aberdeen
 1571 Gibson James, 34 Abbotford Place,
 Glasgow
 1577 Gibson, James, Torrie Castle Douglas
 156 Gibson, James, 2 Chimeras Crescent,
 Edinburgh
 157 Gibson, James, Damhead House, Murry-
 field
 1564 Gibbs n T, Gunsgreen Hill, Ayrton
 1575 Gibson, John George, 15 Canburgh Park,
 Blackheath, London
 1560 Gibson, J T, Tullowquhann, Kirkcubbin,
 Dumfries
 1575 Gibson, John, Langshill Rousay,
 Orkney
 1556 Givon, Rev. John, Avoch Manse,
 Ross-shire
 1554 Gibson, Robt, Cairne Hill, Beigie,
 Kirkcudbright
 1548 Gibson, Thomas, Haymount, Kelso
 1569 Gibson, Thomas, Bannhead, Mountain
 Road, Edinburgh
 1578 Gibson, Thomas, Sheriffyards, Clack
 mannan
 1573 Gighich, Italo, Prof of Chemistry,
 Portici—*Free Life Member*
 1577 Gilbrink, Andrew, Carronmum, An
 struther
 1576 Gilchrist, Andrew, Manager's Office,
 Powers Court, Kinniserry, C Wicklow
 1565 Gilchrist, Dugald, of Ospisdale, Dur
 nith
 1564 Gilchrist, James, Baker Bank
 1575 Gilchrist, William, late Knivocklaw,
 Loudoun
 1552 Giles, James, late of Kailae
 1552 Gilkie Gilbert, Canal Iron Works
 Kailad
 1575 Gill John Clyth Mans, Wark
 1571 Gillespie, Alex Balmadownside Cupar
 1541 Gillespie David, of Mountquhanne,
 Cupar Kirk
 1553 Gillespie, Denholm, 6 Marchbank Ter
 race, Dumfries
 1549 Gillespie, James, Craige Cramond
 1575 Gillespie, James J, St Colmes, Balhu
 lug
 1575 Gillespie, Jas John, late Parkhall,
 Douglas
 1547 Gillespie, Sir John, W S, 53 Northumber
 land Street, Edinburgh
 1575 Gillespie, Rev John, Mouswald Manse,
 Ruthwell R.S.O.
 1575 Gillespie, John, Temperance Hotel,
 Oban
 1554 Gillespie, Wm, Gateside, Douglas
 1577 Gillies, William, Writer, Pollokshaws

Admitted

- 1557 Gillon, Colonel, of Wallhouse Bath
 gate
 1575 Gilmour, Alexander, Annfield House,
 Irvine
 1549 Gilmour, Allan of Eaglesham, Glas
 gow
 1582 Gilmour, Arthur, Crosshill, Last Kil
 bride
 1575 Gilmour, James, Ochridton, Cumnack
 1572 Gilmour, John, of Lundin, Montrose
 Leven
 1563 Gilmour, John, of Mount Vernon
 Row
 1557 Gilmour, Matthew, Town of Inchinnan
 Paisley
 1581 Gilmour, William E, Woodbank, Alex
 andria, N.B.
 1525 Gilmour, W J Little of Craigmillar
 New Club, Edinburgh
 1556 Gilmour, W. P, Balmangan, Kirkcud
 bright
 1552 Gilroy, James, Manure Merchant, Bel
 wick on Tweed
 1576 Gladstone, John Robert, yr of Pasque,
 Fettercairn
 1534 GLADSTONE, Sir Thomas, of Pasque
 Bart, Fettercairn
 1554 GLADSTONE, Right Hon the Earl of
 1547 Glasgow, Alexander, late of Auchin
 raith
 1574 Glasgow, R Bruce Robertson, of Mont
 greenan, Kilwinning
 1557 Glass, John Factor, Miliken House,
 Johnstone
 1573 Glen, James (late of Rosebank), Hilen-
 burgh
 1547 Glen, John, late Merchant, Edinburgh
 1560 Glen, Robert R, Banker, Lanthgow
 1549 Glendinning, Alex, New Mans, Kirk
 caldon
 1573 Glendinning, Geo P, Dalmeny Park,
 Edinburgh
 1569 Glendinning, G R, Hatton Mans
 Wileston
 1574 Glendinning, James P, Overshiels, Mil
 Calder
 1545 Glendinning, Peter, Dalmeny Park
 Edinburgh
 1575 Glog Wm Elms, of Kinnaird, (C
 Heriot Row, Edinburgh
 1559 Glover, Andrew, Lanrick Castle, Doune
 1570 Goddard, H B, Belsay, Newcastle-on
 Tyne—*Free Life Member*
 1577 Goff Dr Bruce, Woodlee, B thwell
 1575 Gold, Joseph, Muthly Farm, Perth
 1565 Goldie, R & M, 3 Comely Green Place
 Edinburgh
 1574 Goodbrand, James H, Culnaha, Nigg
 Ross-shire
 1557 Goodwin, John, Clydevew, Motherwell
 1575 Gordon, Adam Hay, of Mayen, Huntly
 1555 Gordon, Alexander of Pitlurg and Dyce,
 Parkhill House, Aberdeen
 1556 Gordon, Alexander J, Kirkcudbright
 1576 Gordon, Alex Morrison, of Newton
 Insch, Aberdeen
 1575 Gordon, Arthur Newton Forbes, of
 Rayne, Corse House, Lumphannan
 1566 Gordon, Chas, late Cannegie, Parton
 1573 Gordon, Carlos Pedro, of Wardhouse.
 Insch, Aberdeenshire
 1576 Gordon, Chas, of Hallmyre, Lamantha
 1555 Gordon, Edward, Keltonhill, Castle-
 Douglas
 1560 Gordon George, Land Surveyor, Elgin
 1575 Gordon, Graham, Middlecote House,
 Ayr, Ayr
 1560 Gordon, Henry, Sheriff-Clerk, Moathrae,
 Dumfries
 1576 Gordon, Henry, of Manar, Inverurie

Admitted

- 1886 Gordon Henry G Fellowes of Knock
especk Clatt Aberdeen shire
1886 Gordon Henry Wolrige of Hullohead
Esselment Elton
1877 Gordon James Castle Douglas
1874 Gordon James A of Aithell N
Ross shire
1880 Gordon James G Milton of Kilravock
Nurn
1838 Gordon John of Aikenhead Cattle
1870 Gordon John (late Culivren Kirkcud
bright) America
1871 Gordon John of Crugmyle Topham
1875 Gordon John Lumschy Fern
1881 Gordon John P of Culhelli Can
field H use Fochibers
1876 Gordon Peter of New Glenlivet B
Hindaloch
1846 Gordon Robert Macintyre of Pith
Lilleulank Kircudbright
1870 Gordon Robert Wm Bailie of Lumb
gate or John Gibo Howland
Pecbles
1838 Gordon Thomas Dempster of Bal
maghie Castle Douglas
1876 Gordon William Auchincloss Dne
mar
1879 Gordon William of Earls n But
Kirkcudbright
1884 Gornie John Prince St Perth
1866 Gough Wm Land Agent Wykeham
York
1884 Goulding W J Poebuckhill Loofer
stown Dublin
1876 Gourlay James, Blubber Hill Ab
lemon B ifer
1871 Goulliv Robert C nning Albank
Whithorn
1881 Gover L D of Broilwater Road
Wothington, L f Vember
1883 Gow Andrew Crinston Bailie Dal
keith
1886 Gow George, Crinston Raddell Dal
keith
1860 Gowans Sir James of Castle Terrace
Edinburgh
1887 Grace Stuart St Andrews
1884 Grace Charles of Euster Happiew
stobo
1881 Grime, Robert of Garrook, Bridge of
Eun
1873 Graham Alexander, Dithonsie Muns
Dilkuth
1881 Graham A G Vixtone of Culto
quhey Leith
1873 Graham Daniel Moigie Auchness
Forin
1873 Graham George Orkbank Longtown
1881 Graham George jun Listerboud
Guthrie City
1875 Graham H Auckland New Zealand
1827 Graham James (nearly of Leith
town) Tontinnad
1848 Graham James Maxtone of Cultoquhey,
Perth
1861 Graham James Longburgh House
Burgh by the Sea Fife
1863 Graham James late of Southbur,
Paisley
1885 Graham James H S of Dunnabie
W 7 Hill Street
182 Graham John of Shaw Lodeline
1884 Graham Major General John Gordon
of Wyseby Ecclefechan
1886 Graham Paul Brookes Club St James
Street, London
1873 Graham Robert G, late Burnfoot on
Lak Longtown
1882 Graham, Thomas 40 St knock Square,
Glasgow

Admitted

- 1876 Graham Wm Wheatlan of Cromond
Bailie
1886 Graham Wm Brewer Puff
1873 Graham James Western Club Glas
gow
1872 Grant A Cail House Inverary
1864 Grant C Macpherson, of Drumdun,
Forbes
1862 Grant Chris Hazelbrae Glen Urquhart
1886 Grant Sir Francis William of Mony
musk Part Aberdeen
1869 Grant Captain Frederick G Forsyth of
Ecclesgie, Montrose
1870 Grant George Glenfarclas Ballindal
loch
1874 Grant George Pollo Invermorion
1874 Grant Sir George Macpherson of
Ballindalloch But Ballindalloch
1876 Grant George of Auchinchan
Glenlivet Ballindalloch
187 Grant Henry Oglvie Glen Euan
Craigh
1825 Grant Rev James D C L DD 1,
Palmerston Place Edinburgh—Cl
lain to the Society
1871 Grant John Inverloun n Cail Bailie
1870 Grant John Bunter Northwick
187 Grant John Muns of Advie Aithie
1876 Grant John Brown Ecclesie Leith
187 Grant John Macpherson of Ballin
dilloch
1879 Grant John Sinclair Tullymet, Ballin
luir
1883 Grant Kenneth late Pilmun Villa
Forbes
1862 Grant Full Marshal Sir Patrick
G D Chelsea Hospital
1841 Grant Robert of Drummond Lhynie
1842 Grant Robert Bokselle 10th Prince
street Edinburgh
1874 Grant Major William Drumme Glen
Urquhart Inverness
187 Grant William Wester Alva Forbes
1874 Grant Colonel W L, boile House
Finn Thurso
1880 Grant Wm Ross of Inverness
1823 Grassick John 21 Feinhill Place
Aberdeen
1876 Gray Adam van Ingleston of Fife
Kirkcudbright
187 Gray Alex Inverloun Tannaholm
1870 Gray Andrew West Glen Lannoch
burn
187 Gray E I Stuart of Glen n L
fauns Kinfarnoch Leith
1850 Gray George of Lowiswell Faith
187 Gray James Kilmun Stirling
1861 Gray James, Braehead Muns of Cromond
1868 Gray James Seddum of Craig
ling
1871 Gray James Rosebank New Stone
Perth
1884 Gray James Harperry Muller
1871 Gray John Merchant Helensburgh
1876 Gray John, 131 Renfrew Street Glas
gow
1884 Gray Patrick Middle Street Falkirk
1870 Gray Robert Smith, Southfield Dud
dingston
1885 Gray Thomas M, Barony Cottage
Cupar
1868 Gray Thomas R St Margaret's Chel
tenham
1882 Gray Walter Wingate, of Nunraw
Prestonkirk
1849 Gray Wm, Southfield, Duddingston,
Edinburgh
1880 Gray Wm Brownrig North Ferwick
1874 Green Robert, Ruthie Aberlour,
Crugellachie

Admitted

- 1882 Greenshields, David, Land Steward
Garvild, Dolphinton
1867 Greenshields, James, West Town, Les
mahagow
1876 Greenshields, T A, Windymains,
Salton
1854 Gregory, Alex Allan, Corn Merchant,
Inverness
1833 Gray, Rev Arthur Thomas, Inver
ham Rectory, Bovey Tracey
1884 Greig, Andrew, of Holston, Milnathort
1871 Greig, David (John Fowler & Co),
Leeds
1808 Greig, George, Harvieston, Stonehaven
1870 Greig, J A, Estate Office, Fawley Court,
Hinley en-Trames
1873 Greig, James Booth, Laurencekirk
1883 Greig John, of Tillyrie, Milnathort
1869 Greig, Peter M, late 56 Inverleith Row
Edinburgh
1877 Greig, Robert M, Fountain House
Works, Fountainbridge, Edinburgh
1880 Greig, Thos Crabb, Rephad, Stranraer
1861 Greig, T Watson, of Glencarse Perth
1884 Greig, Wm, Ashentally, Durris, Aber
deen
1884 Grier, W F, late 55 Bath Street, Glas
gow
1880 GRIERSON, Sir A D, of Lagg, Birt,
Dumfries
1851 Grierson, J, Haugh of Orr, Dalbeattie
1869 Grierson, Joseph, Breoch, Castle
Douglas
1854 Grierson, Robert, Whitchesters, Ha
wick
1859 Grierson, Wm, 41 Queen Street, Castle
Douglas
1872 Grieve, Archd, Albuergg, Canonbie
1878 Grieve, Charles John, Branhholm Park,
Hawick
1867 Grieve, D, Blackberry Hill, Whitburn
1878 Grieve, Gilbert, Carduf
1873 Grieve, James, Howden, Selkirk
1879 Grieve, James, Langlee, Torryburn
1885 Grieve, James, jun, Fernlees, Selkirk
1858 Grieve, John, Callander
1869 Grieve, John, Balmoral Hotel, Princes
Street Edinburgh
1859 Grieve, Michael, Callander
1857 Grieve, Robert, Auch, Tyndrum
1871 Grimond, Alex D, of Glenochry, Blair
gowrie
1872 Guild, Andrew, Rhodars, Alys
1868 Guild, James, Balgone Villa, North
Berwick
1875 Guild, James Lyon, Abbey, North
Berwick
1866 Guild, James Wylie, C A, Glasgow
1861 Guild, Thomas, Herdhill, Kilmear
1877 Gulland, William John Monkton Hall,
Musselburgh
1856 Gulton, Allan James, of Duleton, Llan
guddock, Carmarthenshire
1858 Gunn, Alexander, Dale, Halkirk, Thurso
1856 Gunn, Alexander, Achley, Dornoch
1882 Gunn, Alexander, V S, Balloan, Muir
of Ord
1839 Gunn, James, Sibster, Wick
1853 Gunn, John, The Hermitage, Golspie
1875 Gunn, Wm, Strathpeffer, Dingwall
1882 Guthrie, Charles M L, of Carnoustie,
Taybank House, Dundee
1854 Guthrie, David, Banker, Stranraer
1837 Guthrie, Robert, Crossburn, Troon
1884 Guthrie, Wm, Crossburn, Troon
1884 Gwynne, Alban Thomas James, of Mon
achty, Cardigan

1857 HADDINGTON, Right Hon the Earl of,
Tynninghame, Prestonkirk

Admitted

- 1857 Haddon, Andrew, Honeyburn, Hawick
1880 Haddon, P M, St Marys, Orton
Rochabers
1880 Haddon, Walter, Solihull, Hawick
1884 Haddow, R, Cold Chapel, Abington
1869 Hagart, James Valentine, W S, 140
Princes Street, Edinburgh
1884 Haggart, Jas, Welltown of Leys, Inver
ness
1871 Haggart, Peter, Breadalbane Mills,
Aberfeldy
1869 Haig, Hugh V, Ramornie, Ladybank
1874 Haig, Jas Richard, of Blairhill,
Dollar
1886 Haig, Robert, Dollarfield, Dollar
1875 Haig, W J, of Dollafield, Dollar
1875 Haig, William (late North Street, St
Andrews), Australia
1861 Ham, David (late Drummack, Crail),
Canada
1883 Ha n, James, Tontine Hotel, Cupar Fife
1885 Ham, James Ashton, Coll, Tobsimory
1871 Ham, Thomas, late Cuplawhill, Leu
chirs
1870 Hanning, J J, Chapelcroft, Lochmaben
1859 Haldane, R, Barless, Cornhill on Tweed
1864 Halkett, James, Auchentender, Inch
1864 Halkett, Lieut Col John Craigie, of
Cramond, Edinburgh
1870 Hall, Alexander H, Campfield, Ban
chory
1873 Hall, Allan, Ardmaddy, Easdale, Olan
1855 Hall, Andrew, of Calrossie, Nigg, Ross
shire
1884 Hall, David, Ingram, Alnwick
1878 Hall, Sir Basil F, of Dunglass, Birt,
Cockburnspath
1874 Hall George Ross Invergordon
1875 Hall, James M, of Tanga and Killeau,
Killeau House, Taynloan
1874 Hall, John, Tomich, Invergordon
1877 Hall, Thomas Farmer (Thomas Farmer
& Co), Dunster House, Wark Lane,
London, E C
1867 Hallen, J H B, V R C V S, F R C S D,
F R S E, Inspecting Veterinary Sur
geon and General Superintendent of
Horse Breeding in India, Bombay
1878 Halley, George Alloa
1870 Halley, John, Dornoch Villa, Crieff
1886 Halliday, Andrew, Dussertland Farm,
Thornhill
1865 Halliday, Thos, late Rosshall Foundry,
Haddington
1865 HAMILTON & BRADON His Grace the
Duke of K I, Brodick Castle, Arran
1857 HAMILTON of Dalziel, Lord, Dalziel,
Motherwell
1881 Hamilton, Alexander, Commercial Bank,
63 Wallace Street, Stirling
1848 Hamilton, Claude Hamilton, Preston
Hall, Dalkeith
1861 Hamilton Daniel, late 60 Hutchison
Street, Glasgow
1875 Hamilton, Gavin, of Auldton, Lesma
hagow
1860 Hamilton, George, Airdendee, Kirkcud
bright
1876 Hamilton, George, of Skene, Skene
House, Aberdeen
1853 Hamilton, Hugh, of Finmore, Ayr
1883 Hamilton H W, Uffington, Stamford
—Free Life Member
1865 Hamilton, James, Wallace Bank, Kil
marnock
1869 Hamilton, J B B Bailie, of Arnprior,
Cambusmore, Callander
1869 Hamilton, James, Woolfords, Carnwath
1881 Hamilton, James A, of Whiteshawgate,
Strathaven

Admitted

- 1870 Hamilton, John, Conenish, Tyndrum
 1889 Hamilton, Lieut.-Col. John, of Sundrum, Ayr
 1883 Hamilton, John, Little Cantray, Fort George Station
 1880 Hamilton, John Alex., 15 Mayfield Gardens, Edinburgh
 1846 Hamilton, John Buchanan, of Leny, 'allander
 1855 Hamilton, J. B. (late Burnhouse, Carnwath), London
 1870 HAMILTON, Hon. R. B., Langton, Duns
 1873 Hamilton, Robert, 29 St James Square, Edinburgh
 1877 Hamilton, Thomas, Poniel, Douglas
 1878 Hamilton, Thomas, Park House, Carstairs
 1864 Hamilton, William, of Cairns, Kirknewton
 1883 Hamilton, Wm., High Motherwell, Motherwell
 1874 Hamilton, William Cameron, Baltsound, Inverness
 1859 Hamilton, Wm. F., The Elms, Lauriston, Falkirk
 1880 Hamilton, Wm. Sloan, Springside, Kilmarnock
 1881 Hamilton, Zachary Macaulay, Symbister, Lerwick
 1872 Handyside, J. B., Fenton, Drem
 1843 Handyside, W., 20 Magdala Crescent, Edinburgh
 1858 Hannay, John, Gavenwood, Banff
 1876 Hannay, Robert, late Dournemouth
 1871 Hardie, Chas., late Primrose, Dunfermline
 1870 Hardie, David, Prieststhaugh, Hawick
 1875 Hardie, Edmund W., Locher House, Bridge of Weir
 1831 Hardie, George (late Orwell, Kinross), Australia
 1878 Hardie, John, jun., Mull of Galloway, Stranraer
 1863 Hardie, W. H., 17 Millerfield Place, Edinburgh
 1884 Hardy, C. W. L., Gittisham, Hunilton—*Free Life Member*
 1878 Hare, Lieut.-Col., Philpston House, Winchburgh
 1880 Harkness, Walter Irvine, Shaws, Ettrick, Selkirk
 1876 Harper, Frank Vogan, late Bridgend, Llanthony
 1885 Harper, Hugh (Harper & Co.), Aberdeen
 1884 Harper, James, Fordel, Dalkeith
 1880 Harper, John, Traquair Mains, Innerleithen
 1867 Harper, Joseph, Snawdon, Gifford
 1871 Harper, W., Sherriffhall Mains, Dalkeith
 1864 Harris, Richard H., late Earnhill, Forres
 1871 Harris, Wm., Innkeeper, Alyth
 1867 Harris, Wm., Sun Wharf, Deptford, London, S.E.
 1846 Harrop, I. Worthington, New Zealand
 1831 Hart, Andrew, Mains of Aberdalgie, Perth
 1884 Hart, John, Cowie House, Stonehaven
 1873 Hart, William, Pothill, Auchtermaler
 1876 Harvey, George Thomson, 63 Union Street, Aberdeen
 1854 Harvey, J. H., Pitgerie, Foveran, Ellon
 1853 Harvie, Rev. W., of Brownlee, Carluke
 1860 Hathorn, Lieut.-Col. John Fletcher, of Castliewig, Whithorn
 1875 Haughton, Wm. H., Park Lodge, Kimbulton, St Neots
 1875 Hay, Alexander, 96 Constitution Street, Leith

Admitted

- 1870 Hay, Alex. (Hay & Kyd), Easter Caltmillie, Perth
 1835 Hay, Alexander (Ben. Reid & Co.), Aberdeen
 1874 Hay, Alex. Penrose, Riverdale, Inverness
 1862 Hay, Col. A. S. Leith, of Bannes, C.B., Leith Hall, Kennethmont
 1865 Hay, C., Ardbeg, Islay, Greenock
 1862 Hay, Colonel Drummond, of Seggieden, Perth
 1841 Hay, George W., late of Whiterigg, Melrose
 1862 Hay, Captain J. G. Baird, of Belton, Dunbar
 1862 Hay, Ja., 9 Castle Street, Edinburgh
 1853 Hay, James, jun., Little Ythsie, Tarves
 1878 Hay, James Tonner, of Blackhall Castle, Banchoy
 1878 Hay, James S., Clydesdale Bank, Falkirk
 1857 Hay, John, of Millmoss, Turrieff
 1878 Hay, J. F. D., yr. of Park Place, Dunlop House, Dunlop
 1848 HAY, Sir J. C. Dalrymple, of Park Place, Bart., Glenluce
 1882 HAY, Sir John A., of Haystoun, Bart., Kingsmeadows, Peebles
 1869 Hay, Wm., 2 Hill Street, Edinburgh
 1876 Hayman, John, Dumfries House Mains, Cummock
 1883 Hayward, Chas. P., Beaumont Manor, Lincoln
 1873 Hazle, Alex., of Blackcraig, Drumburie House, New Cummock
 1883 Hebden, A. C., Nairn
 1876 Hector, A. Ed. 167 Crown Street, Aberdeen
 1871 Heggie, Henry, Mains of Beath, Crossgates
 1871 Heggie, Robert B., West End House, Kirkcaldy
 1871 Heiton, Andrew, of Darnick Tower, Perth
 1847 Henderson, Alex., of Stemster, Thurso
 1873 Henderson, A. W., Airthrey Paper Mills, Bridge of Allan
 1874 Henderson, A. W., of Billster, Wick
 1847 Henderson, C. J., Briery Yards, Hawick
 1854 Henderson, David, of Abbotrude, Bonchester Bridge
 1883 Henderson, David P., yr. of Stemster, Thurso
 1878 Henderson, G. D. Clayhills, Commander R.N., of Invergowie, Dundee
 1885 Henderson, George, Shidlaw, Coldstream
 1863 Henderson, Jas., Mintokains, Hawick
 1860 Henderson, Jas., Kelloside, Sanguhar
 1863 Henderson, James, Culcain, Invergordon
 1857 Henderson, John, Solicitor, Dumfries
 1854 Henderson, John, Fortrose
 1876 Henderson, John, 28 Frederick Street, Edinburgh
 1878 Henderson, John, Valley Farm, Kingsbury, Middlesex—*Free Life Member*
 1885 Henderson, Mrs John, 4 Granville Place, Aberdeen
 1888 Henderson, Captain J. H., Rosebank, Wick
 1883 Henderson, Peter, Factor's Office, Beaulieu
 1874 Henderson, Richard, The Grange, Kirkcudbright—*Free Life Member*
 1858 Henderson, Robert, Nether Carsbridge, Alloa
 1880 Henderson, Robert, East Gordon, Gordon, Berwickshire

Admitted

- 1804 Henderson, Thos., 6 Saville Road, Edinburgh
 1861 Henderson, W., Milton of Collace, Cuppar Angus
 1877 Henderson, Wm., of Redford, Linlithgow
 1881 Hendrie, John, Boulder, Inverness
 1882 Hendrie, John, 74 Bath Street, Glasgow
 1883 Hendrie, John, Boulder, Inverness
 1883 Henry Lieut Gen Chas Stuart, C.B., The Pavilion, Melrose
 1883 Henry Matthew, Ankerhill, Nigg Ross-shire
 1893 Hepburn, James, Preston Mans, Prestonkirk
 1876 Hepburn, James Spital, Kethhall, Inverurie
 1884 Hepburn, James, Links House, Kinghorn
 1877 Hepburn, John, 66 High Street, Kinghorn
 1885 Hepburn, John V.S. Milnathort
 1837 Hepburn, Sir Thos Buchan, of Smeaton, Bart., Prestonkirk
 1881 Herbertson, Robert H. Fins Earlsdon
 1876 Herdman, Benjamin A., Falkland Wood, Falkland
 1877 Herdman George, The Mingsham, Swinham
 1876 Herries, Right Hon Lord New Abbey
 1883 Herries Alexander Young, of Spottes, 16 Henri Row, Edinburgh
 1884 Herriot, David, Whitelaw, Edrom
 1877 Herron, W., Town Clerk, Renfrew
 1883 Hetherington, R. B., Auction Mart, Earl Street, Carlisle
 1857 Hewat, Richard, Writter, Castle Douglas
 1862 Hewetson, J., Auchenshauze, Thornhill
 1870 Hewetson Joseph, Balteron, Newton Stewart
 1870 Hiddleston, John, Kilroy, Dunscore, Dumfries
 1863 Higgins Robt., Vinegar Prestonkirk
 1861 Hill, Alex., of Stonywind, Boarhills, St Andrews
 1873 Hill Arthur James (Theodore Jones, Hill & Co.), Accountant, 36 Lane downe Road, London, W.—*Life Member*
 1877 Hill, David, Upper Vagus St Andrews
 1861 Hill, James, Bradston Melrose
 1850 Hill, John, Carlisle, Cranmond Bridge
 1881 Hill, John, Langside Kennoway
 1851 Hill, Robt., Navidale House, Helmsdale
 1874 Hill, Robert Robertson, Navidale House, Helmsdale
 1863 Hilton, George, Solicitor, Jedburgh
 1862 Hislop William Corribulder, Edinburgh and Haddington
 1863 Holbush, J., Broadburgh, Hawick
 1860 Hog, Thos A., of Newliston, Kirkcaldy
 1842 Hogarth George, Banker Upper Rife
 1863 Hogg, Henry, Symington Vams, Stow
 1876 Hogg, Robert, 17 Walmer Crescent, Glasgow
 1850 Hogg, Robert, Rosemay, Leadburn
 1854 Hogg, Thos., Hope Park, Coldstream
 1860 Hogg, Thomas, Ovenford Mans, Dalkeith
 1880 Hogman, Andrew, jun Queensland
 1873 Holliday, Jonathan, Kirkhampton, Carlisle
 1878 Holliday, Wm., Pelutbo West House, Abbey Town, Carlisle
 1878 Holliday Wm., Plumblund, Aspatra, Carlisle

Admitted

- 1883 Holm Alexander, Ballimore, Kilmichael, Lochgilphead
 1875 Holm John Jaapston, Vailston
 1880 Holmes Hon Matthew, Cantia, Dunedin, New Zealand
 1879 Holmes, William, Fullarton Street, Irvine
 1874 Holst Christian, Chamberlain to His Majesty Oscar II, and Norwegian Count
 1880 Home, Right Hon the Earl of, The Russell, Coldstream
 1886 Home, David Milne, of Milne Garden, Coldstream
 1874 Home, Colonel David Milne, of Wedderburn, Paxton House Berwick
 1886 Honeyman, Thomas, Achnacarry, Fort William
 1883 Honeyman, A. P., Writer, Kirkcaldy
 1888 Hood, Archibald, Rosewell
 1876 Hood, David A., Balgaddan, Kirkcaldy
 1881 Hood, David M., Gedhall, Barry, Cairn
 1878 Hope, Alex., Pinkie House, Musselburgh
 1880 Hope, Alex., Cleveland Cottage, Middleton in Teessdale
 1879 Hope, Alex. P., Sunwick, Berwick
 1886 Hope, Captain Charles, of Cowden Knowes, Earlsdon
 1877 Hope, Hon Charles, of Bridge Castle, St Mary's Isle, Kirkcudbright
 1886 Hope, Henry W., of Luffness, Drem
 1865 Hope, James, East Barns, Dunbar
 1847 Hope, James, of Belmont, Murrayfield
 1848 Hope, James Edward, 10 Magdala Crescent, Edinburgh
 1886 Hope, John, Commander R.N., St Mary's Isle, Kirkcudbright
 1876 Hope, John Wilson, 3 Ramford Street, Liverpool
 1878 Hope, Sir John David, of Pinkie, Bart
 1878 Hope, William James, East Barns, Dunbar
 1884 Hopetoun, Right Hon the Earl of, Hopetoun House, South Queensferry
 1871 Horn, John, of Thomanean, Milnathort
 1844 Horncastle, Henry, late Whitmoor, Olferton Newark
 1881 Horne, Edward William, of Striloke, Carthness
 1880 Horne, Thomas, 19 Grosvenor Street, Edinburgh
 1878 Hornsby, James (R. Hornsby & Sons), Spittalgate Ironworks, Gantham
 1878 Hosack, William, Oban
 1878 Houldsworth, Arthur, Spungfield House, Lasswade
 186 Houldsworth, Henry, Carrick House, Ayr
 1888 Houldsworth, James, of Coltness, Wilsnaw
 1886 Houldsworth, J. M., Ayr
 1886 Houldsworth, Joseph Henry, Glasgow
 1878 Houldsworth, Walter J., Coltness House, Wilsnaw

Admitted

- 1857 Houldsworth, William, Mount Charles, Ayr
1878 Houston, John, Overlaw, Kirkcudbright
1878 Houston, John, The Hill, Castle Douglas
1875 Houstoun George L, of Johnstone, Johnstone, Renfrewshire
1877 Houstoun Michael Henry, of Beechhill, Haddington
1883 Houstoun Major J F, of Clerkington, Haddington
1884 Houstoun Wm Kintredwell Brown
1880 Howard, James (J & F Howard), Bedford
1884 Howat, John, Lower Netherwood, Dumfries
1865 Howatson Charles, House of Glenbuck, Glenbuck, N B
1870 Howatson, John L, Ramsaycleugh, Selkirk
1876 Howatson, W M, Curshoch Patna, Ayrshire
1885 Howden John, Inverness
1864 Howden John, Overseer, Nether Braco, Perthshire
1864 Howe, Alexander W S, 32 Charlotte Square, Edinburgh
1883 Howe Thos, Parks of Inshes, Inverness
1887 Howie Archd, Roschery Goreland
1863 Howie, H Brown, North Hazelrigg, Bedford Northumberland
1863 Howie James Hadron Kelso
1886 Howie, James, Burnhouse, Kilmarnock
1887 Howie, John Huirford Kilmarnock
1879 Howie William, Kinnochlog, Inverkip
1862 Hozier W W of Newlands, Mundslie Castle, Culnake
1853 Hubback Joseph, Liverpool
1860 Hudspeth, Wm, Green Croft, Haltwhistle
1886 Hughan, Henry H, of Airds, Castle Douglas
1877 Hughan, Peter H, Cults Whithorn
1872 Huzhes, George F, of Middleton Hall, Wooler
1870 Hugonin, R, Kinmyles House Inverness
1809 Hume Archibald, of Auchendolly, Dalbeattie
1880 Hume, David, Bannellwell Brechin
1871 Hume, G T, late Banlawhill, Kelso
1840 Hume, P Hallybuston, Dunbu
1870 Hunt, A E Brooke, 10 Pall Mall London S W—Free Life Member
1859 Hunt, James, Alex of Pittencreiff, Lorne, Dunfermline
1876 Hunter, Capt Alexander C of Tillery and Auchinnes, Aberdeen
1884 Hunter, Charles, Upper Mills of Drum Craithes
1867 Hunter David, Gmitfreshill, Mybole
1860 Hunter Ev in Alan, W S, 7 York Place, Edinburgh
1884 Hunter, George, Kuktown of Banchory Banchory Ternu
1861 Hunter, Herbt, late of Burnhead, Locksley
1876 Hunter James, of Antonahill, Coldstream
1887 Hunter, James, Coplawhill Glasgow
1884 Hunter, Jan es, Lochside, Lockerbie
1885 Hunter, James, Culgroat, Stranraer
1884 Hunter, John, Dipple, Forchibers
1875 Hunter John, Netherahill, East Calder
1877 Hunter, John, jun, Woodhall Mans Juniper Green
1871 Hunter, Patrick, Ardgarth, Glencarse
1879 Hunter, Major Patrick of Auchterarder
1887 Hunter, Richard, of Thurston, Dunbar

Admitted

- 1863 Hunter, Robt, 10 Ainslie Place, Edinburgh
1878 Hunter Thomas Implement maker, Maybole
1869 Hunter, William, Craighead, Abington
1883 Hunter William B, Alacan Cottage, Musselburgh
1887 Hunter William, Machribeg, Campbelltown
1872 Hunter Most Noble the Marquis of, Aboyne Castle Aboyne
1884 Husband, David, Struthers, Cupar Tife
1884 Hutcheon Alex Nether Ordley, Auchterless Turriff
1886 Hutcheon Major John, Lower Cutburn, Turriff
1887 Hutcheon John of Upper Turriff
1883 Hutcheson, Andrew, West Mill Inchture Perth
1880 Hutchins n, Alan, Cumserney Cottage, Aberfeldy
1883 Hutchison, Alexander Inglewde Kirkcaldy
1880 Hutchison, Graham of Balmaghie, Castle Douglas
1887 Hutchison, James, Kirkhill, Dalton, Lockerbie
1872 Hutchison, James Thomas, 12 Douglas Crescent Edinburgh
1886 Hutchison John Osgang Torthward
1873 Hutchison John Wm, of Edinghame, Argrennan, Castle Douglas
1888 Hutchison R of (allowin, 2) Chester Street Edinburgh
1880 Hutchison, Thomas, Bellfield, Duddingstone
1871 Hutchison, Thomas Broomhills, Loanhead
1888 Hutton, Arthur Lorton, Tottenham, Cheshire
1889 Hyndman Henry C, of Springside, West Kilbride
1870 Hyslop, And, Auchencroch, Dalbeattie
1880 Hyslop, Wm, Glenries, Bingham
1880 Imrie, James S Somerset Villa Perth
1870 Imrie, John L, Blackhill, Muynhill
1883 Inch, Adam S uthwuse Liberton
1878 Inch, John Howburn Walston Baggard
1877 Inch Robert, 1 Victoria Street, Edinburgh
1880 Inch, Thomas Gilfercleugh Alington
1863 Inglis Alex Wood, 71 of Glencoise, 30 Abercromby Place Edinburgh
1884 Inghis, David 140 St Vincent Street, Glasgow
1870 Inghis, George of Newmore Invergordon
1884 Inghis, H H W S, 83 St David Street, Edinburgh
1882 Inghis, Right Hon John of Glencorse, Lord Justice General, 30 Abercromby Place Edinburgh
1887 Inghis, John, of Redhall
1864 Inghis, John Kepdarroch Gargunnock
1880 Inghis Peter, East Pilton, Kairy Road Edinburgh
1877 Inghis Robert, Loveston House Gyrvan
1878 Inghis, Thomas F, Kinnermony, Craigellachie
1874 Innes, Charles, Solicitor Inverness
1887 Innes, John C, W S, 11 Moray Place, Edinburgh
1881 Innes Sir J, of Balveny and Edengight, Gart Keith
1846 Innes, C L Thos, of Learney, Torphins
1847 Innes, Thomas S Mitchell, of Phantassie Prestonkirk
1862 Innes, T G Rose of Netherdale Turriff

Admitted
 1873 Ireland David, of Denork, St Andrews
 1888 Ironside, John Brindy, Keng White house Aberdeen
 1890 Ironside, William Cloftrickford Ellcnj
 1845 Irvine, Alex Forbes of Drum, Aberdeen, Sheriff of Argyll
 1870 Irvine, Benjamin, Dumfries
 1873 Irvine George Forbes, Nigg, Ross shire
 1860 Irvine, Walter, of Grangemur, Titten weem
 1843 Irvine Wm Stewart, M D Craigatun, Fife
 1883 Irving D J Bell, yr of Whitehill, Dunblane Lockhart
 1855 Irving Herbert C of Burnfoot, Kilsyth
 1869 Irving, J Bell, of Whitehill, Lockerline
 1872 Irving Samuel, Carco, Kirkconnel, Sanquhar
 1872 Jack, Gavin Swinston Letham
 1864 Jack, John C Cambricrenne Stirling
 1863 Jack, W, late Regt's Mill, Cramond Bridge
 1860 Jack Samuel, Crichton Mans, Dalkeith
 1873 Jack Robert Banker, Motherwell
 1869 Jack Thomas, Hermiton Currie
 1884 Jackson, J, Carlsde Bush
 1870 Jackson John, late Bush, Ewe, Langholm
 1880 Jackson, Myor Randle, of Swardale, Ewanton
 1870 Jaffray James Belmont Inst
 1881 Jaffray William Broadridge St Mirians Stirling
 1886 Jameson, Andrew Advocate, 3 St Colme Street Edinburgh
 1884 Jameson Martin Fernhill Perth
 1882 Jameson, Milville Solicitor, Perth
 1880 Jamison, Alex J Barossa Place, Perth
 1858 Jamison David Auchmuthe Mans Arbroath
 1876 Jameson, George, 34 North Kirkgate Aberdeen
 1860 Jameson, George Auldjo C A, 24 St Andrew Square, Edinburgh
 1874 Jameson James Auldjo, W S, 60 Queen Street, Edinburgh
 1880 Jameson, John, 31 Barossa Place, Perth
 1886 Jameson, John, Waterhead Lockerbie
 1871 Jameson Thomas, High Cuthrie, Dunmore Stranraer
 1875 Jameson William Tighnamara, Wemyss Bay
 1886 Jameson Wm H, Thornlie Villa, Loanhead
 1876 Jameson William T Solicitor, Anstruther
 1850 JARDINE Sir Alexander of Appleburgh, Bart Jardine Hill Lockerbie
 1873 Jardine, Andrew, Ballemenoch Helensburgh
 1878 Jardine, Arthur Murray, Kilnwick Hall Cranswick Hull
 1846 Jardine, Jas, of Lariston, Dryscholm, Lockerbie
 1883 JARDINE Sir Robert of Castlemilk, Bart, M P Lockerbie
 1877 Jardine, William, Bogside, Finty, Glasgow
 1870 Jefferson, Robt, Cunningham, Wigton, Cumberland
 1867 Jeffrey, John, Cardowan House, Millerston, Glasgow

Admitted
 1876 Jeffrey Arthur Banks, Bathol Charge Old Meldrum
 1860 Jeffrey David 14 Randolph Crescent Edinburgh
 1859 Jeffrey, John, of Paisley, Large House Largo
 1880 Jenkinson, A D, 10 Princes Street Edinburgh
 1855 Johnson, William, Ashfield Villa, Heaton Newcastle
 1872 Johnson W H, Tweed Villa, Kelso Road, Edinburgh
 1882 Johnston, Alex Hailes, Stelford
 1877 Johnston, Alexander, North Mains, Ormiston
 1877 Johnston, James, Huntingdon Lauder
 1876 Johnston, James Patherburn Wishaw
 1871 Johnston James Cattle Dealer Perth
 1878 Johnston, Jas, Lochburne Maryhill
 1879 Johnston, James, Orphir House, Orkney
 1877 Johnston, James Garloch Dumfries
 1876 Johnston John, Banker Bithgate
 1857 Johnston, John S, Crailinghall, Jedburgh
 1877 Johnston Laurence (of Sands), 11 Castle Street, Edinburgh
 1839 Johnston, Robt, 16 Queens Road, Aberdeen
 1883 Johnston Samuel W, Fincraig Newcastleton
 1860 Johnston Lieut Gen of Carnaloch, Dumfries
 1871 Johnston, Stewart J, Loanleven, Huntly
 1879 Johnston, James, Moffat
 1881 Johnston, Walter Polmount Moffat
 1848 Johnston, Sir William, of Kirkhill, Guelbridge
 1877 Johnston, William, Banachan, Campbeltown
 1878 Johnston, William, of Cowhill, Dumfries
 1886 Johnstone Andrew J S of Hallerthas, Broadholm Lockerbie
 1878 Johnstone James of Alva Stirling
 1860 Johnstone, James Banker Dumfries
 1873 Johnstone James Hunterbeck Moffat
 1880 Johnstone James Lechside Arbroath
 1876 Johnstone, John, Dumfries Linton, Linton
 1877 Johnstone, John, Spinbank Fordoun
 1879 Johnstone John A Archibank, Moffat
 1870 Johnstone John James Hope of Annandale Rathills Lockerbie
 1866 Johnstone, Miss Hope of Annandale Muchlank Wood Moffat
 1881 Johnstone Michael Archibank, Moffat
 1879 Johnstone, Robert, Polmoodie Moffat
 1879 Johnstone, Walter, Alton, Moffat
 1874 Johnstone, W National Bank of Scotland Cuparife
 1882 Jones Charles Dugby, 12 Cheston Street Edinburgh
 1883 Jones R Everard Glenmordart Salen
 1873 Jones John, Budgeter, Cawdor Salen
 1873 Jones R F, Harley, Much Wenlock, Salop—Free Life Member
 1884 Kay, Andrew Little Kerse Kippen
 1876 Kay, Charles, Mill Farm, Gairnnock
 1871 Kay, Duncan James, of Drumpark, Dumfries
 1881 Kay Robert, Mans Farm, Gargunnoch, Stirling
 1867 Kay, Robert, Tuns, Vinard, Inverary
 1871 Kay, Robert, Softlaw Kelso
 1883 Kay, William, Broomeknowe, Lasswade
 1863 Kay, Wm, Inch Farm, Kincardine-on-Forth

Highland and Agricultural Society, 1887

Admitted

- 1844 Kau, Andrew T., late Narnside, Cawdor
 1864 Keir, Duncan, Buchlyvie
 1837 Keir, Patrick Small, of Kindrogan, Pitlochry
 1876 Keith, Alexander, Chapelton, Ellon
 1876 Keith, James, Newton of Kinnmundy, Mintlaw
 1865 Keith, Peter, Factor, Barogill Castle, Wick
 1874 Kelman, Wm, Bainsgore, Fearn
 1876 Kemp, Chas, Methelchun, Dufftown
 1883 Kemp, James, Lime Works, Keith
 1852 Kemp, John, Agricultural Implement Maker, Stirling
 1860 Kennaway, Robert Burnhead, Lasswade
 1863 Kennedy, David, Castlehill, Dumfries
 1840 Kennedy, Jas, of Sundaywell, Burnfoot, Sanguhar
 1871 Kennedy, John, Royal George Hotel, Perth
 1876 Kennedv, John B (late Stenhouse, Thornhill), New Zealand
 1840 Kennedy, John Lawson of Knocknalling, Dalry, Galloway
 1876 Kennedy, John Murray, jr of Knocknalling, Dalry, Galloway
 1875 Kennedy William, Lewes and County Club, Lewes, Sussex—*The Life Member*
 1842 Kennedy, William, Commission Agent, Glasgow
 1870 Kennedy, Wm, Kirkland, Sanguhar
 1874 Kennedy, Wm, Dalmaherran, Thornhill
 1883 Kenyon, Jas Wm, Old Woodhouse, Fartown, Huddersfield
 1863 Ker, El Martin (late of Gateshaw, Motabattle, Kelso), London
 1854 Ker, Robt of Douglaston, Milngavie
 1876 Ker, T Ropley, jr of Douglaston, Milngavie
 1864 Kerr, Abram, Castlehill, Durrisdell, Thornhill
 1878 Kerr, Arch, Upper Dormont, Lockerbie
 1867 Kerr, James, Lochend, Kilharrie
 1857 Kerr, John, Bloomhouse, Coatbridge
 1875 Kerr, John, Blountfield, Ruthwell
 1864 Kerr, John, junr, Yorkston, Gorebridge
 1879 Kerr, John, Rosse Ochil, Forcandenny
 1870 Kerr, Jos, Flatts of Carzen, Dumfries
 1857 Kerr, Robert, of Chipeldonan, 9 Great Stuart Street, Edinburgh
 1877 Kerr, Robert, Ballinrain, Killearn
 1861 Kerr, Thomas, Forehill, Caputh
 1860 Kerr, Thomas Whitehill, Sanguhar
 1845 Kerr, Wm Williamson, late Oriel College, Oxford
 1875 Kerr, Wm, Newhouse, Dalry, Ayrshire
 1833 Kerr, W B, of Chitto, Sunlaw, Kelso
 1862 Keyden James, Kildean, Strathgry
 1867 Khme, Wm, 64 Canal Street, Rangoon, Burmah
 1865 Kidd, Alexander F., High Street, West Aherdour
 1874 Kidd, Hugh, Y S, Market Place, Hungerford Berks
 1869 Kidd, Walter, Balleny, Currie
 1850 Kidston, Jn. P., Nym Park, Barnet, Herts
 1875 Kidston, Richard, 81 Great Clyde Street, Glasgow
 1864 Kier, Thomas, Newlands, Falkirk
 1876 Kilgour, Robert, jun, Ardlin, Ellon
 1882 Kilpatrick, Jas, Craige Mams, Craigie, Kilmarnock
 1862 Kilpatrick, P, 32 Old Kent Road, London
 1868 King, Charles M., Antermony House, Milton of Campsie

Admitted

- 1864 King, David, Dunedin, New Zealand
 1867 King James, of Levenholm, 12 Cluremont Terrace, Glasgow
 1872 King, James, West Mills, Colinton
 1850 King, Jas B, late 5 Richmond Street Glasgow
 1871 King, J Falconer, Analytical Chemist, Chambers Street, Edinburgh
 1869 King, Robert, Levenholm, Hurler
 1876 King, William, jun, Earne, Doune
 1865 King, Lieut Col Wm Ross, of Terowie Kinaldie, Aberdeen
 1850 Kinnmonth, Peter, Collarrie, Newburgh, Fife
 1850 KINLOCH Sir Alexander, of Gilmerton But, Drem
 1865 Kinloch David A jr of Gilmerton Lieut Grenadier Guards, Guards Club, London
 1877 Kinloch, John George Smith, of Kinloch, Bart, Merle
 1829 Kinloch, Col John Grant, of Kilmorie Kilmear
 1863 KINNAIRD Lieut Hon L rd, Rosalie Priory, Inchture
 1879 KINNAIRD, Hon the Master of, Rosalie Priory, Inchture
 1873 Kinnaird, Arthur W, Stonehaven
 1864 Kinnear, Chas, Laisippie, Perth
 1876 Kinnear, C G H, of Drum, 12 Grosvenor Crescent, Edinburgh
 1864 Kinner, John Boyd, of Kinloch, Ladybank
 1856 KINROSE, Right Hon the Earl of, Dupplin Castle, Perth
 1873 Kinross, Andrew, Hungryhill, Dunblane
 1876 Kinross, James, Coldstream, Laurencekirk
 1864 Kinross, John, Hillend House, Clackmannan
 1871 Kinross, Thomas, Long, Baco, Perthshire
 1876 KINTOPF, Right Hon the Earl of, Inghismilde, Laurencekirk
 1861 Kirk, James, Kaimkew Muckhart
 1848 Kirk, John W, 119 Princes Street, Edinburgh
 1874 Kirkland, Major General John Agmon dham Vesey, of Westerford, Milnathort
 1873 Kirkpatrick, David, Linn, Torthorwald
 1879 Kirkpatrick, James, Redhills, Torthorwald, Dumfries
 1870 Kirkpatrick, James, Auctioneer, Annan
 1860 Kirkpatrick, Samuel, West Roucan, Dumfries
 1860 Kirkwood Alexander, 9 St James Square, Edinburgh
 1871 Kirkwood, Allan, Killermont, Maryhill, Glasgow
 1866 Kirwan, Captain Charles Matland, of Gelston, Castle Douglas
 1873 Kirwan, Lieut Matland, Collm, Auchtermuchty Castle Douglas
 1879 Knight, Robert, jun, Y S, Abbot House, Dunfermline
 1877 Knight Wm Gray, of Jordanstone, Meikle
 1874 Knox, Robert, Woodside, Cambus, Alloa
 1879 Kyd, George, (Hay & Kyd) Perth
 1868 Kynoch, George, Isla Bank Mills, Keith
 1872 Kynoch, Dr Patrick, Greenlaw, Berwickshire
 1878 Laidlaw, Robert, Rodono, Selkirk
 1863 Laidlay, E W, Halls Dunbar

Admitted

- 1877 Lamm, Alexander, 55 C Glenoid, 5py
11w Road, Edinburgh
1863 Luing George, Wark (old-tie) term
1880 Luing Thomas (Luing & Mathen), Kelso
1880 Luing William, Denholm Hill, Hawick
1874 Lamm, William, Skull, Thurso
1858 Lund Geo W, of Dunfield Arbroath
1882 Lumerton Andrew, Sunny-side Works,
Cuthbridge
1842 LIVINGSTON, Right Hon Lord, Laning-
ton, Lanarkshire
1884 Lamon, R, Malcilmstone, Currie
1800 Lumont, James, of Knockdow, Greenock
1886 Lumont, Jn, 3 Randolph Place, Edin-
burgh
1854 L Amy John Ramsay, of Dunkenny, 105
Chomwell Road, S W
1877 Landale James, Woodmill, Auchter-
mucly
1878 Landale, James late Cockburnhill
Bilerno
1874 Landale, John, or Woodbank, Banker
Dunfermline
1855 Landale, Thomas, 5 Chalmers Crescent
Edinburgh
1867 Lang, Alex, Borthwickfield, Bridge of
Weir
1875 Lang, Alex, Gruneyland Paisley
1881 Lang, Hugh, Glenorm, Perthmore
1849 Laur, Hugh W, of Brudenell's, St
Kirk
1864 Ling John, Bield Garvunrock
1878 Linn Robert T Brudenell's, St
Kirk
1854 Linn William, Glenorm, Tobermory
1874 Linn, Patrick R, Tweed Terrace,
Bridge of Allan
1864 Latta, Mt Rodger, Carmyle, Tollcross,
Glasgow
1873 Latta William, Dalmailloch, Cumnock
1868 Lander, Alex Goshen, Musselburgh
1859 Lander, Dewar, South Street, St
Andrews
1877 Lawrence, P, 6 George Street, Edin-
burgh
1848 Laurie William Kennedy, of Woodhall,
Castle Douglas
1860 Law, James, East Vams, Broxburn
1870 Law, John, New Kent, Whitehouse,
Aberdeen
1885 Law, John Lochend, Old Meldrum
1860 LAWES, Sir John B, of Rothamstead,
Bart, St Albans
1874 Lawrence, James, Forbes Mills Forbes-
town
1878 Lawrie, Jas D, of Monkrgg, Hadding-
ton
1873 Lawrie, John, Kirklandhill Leven
1884 Lawrie John Pagan, Bieldhill, Loch-
maben
1886 Lawrie, John H, Hardens Duns
1872 Lawrie John W, Mitchellston, Stow
1880 Lawrie Robert, Vint, Glencaulley,
Rosehall Buthelind
1873 Lawrie Thos, Esq, St n Gcrbridge
1872 Lawrie, Thomas, Ormiston Road, Mel-
rose
1875 Lawrie, Wm, Architect Inverness
1853 Lawson, Alex, of Luntnuk, Kettle
1843 Lawson, Alexander, Merchant Dundee
1871 Lawson, Charles, Deebank, Cultra, Aber-
deen
1860 Lawson, C, Ordhead, Cluny, Aberdeen
1866 Lawson, Geo Stoddart, late Edinburgh
1859 Lawson, Henry Graham, late Shoreham
Lodge, Shoreham, Sussex
1884 Lawson, R, Beaufort Farm, Beaulieu
1867 Lawson, Thomas, of Cairnston, Mark-
inch
1867 Lawson, Thomas, Sandyford, Kirtie-
murr

Admitted

- 1853 Lawson, Wm Platchug Beaulieu
1884 Leadbetter H W Wester House,
Gillsland Road, Edinburgh
1883 Leumont, Robert, Westness, Rousay,
Orkney
1878 Leumont, Donald H, Houseby, Sten-
say
1880 Leamonth, George Gray, North Bank,
Boness
1809 Learmonth, Thomas Livingstone, of
Park Hall, Polmont
1884 Learmonth, William, Bowhouse, Grange-
month
1881 Leask, William, Skilmilly, Ellon
1876 Ledingham, Alexander, Balnoon Cottage,
Forgue, Huntly
1885 Ledingham, John, Ship, Turriff
1878 Lee, A H, of Blairhoyle, Port of Mon-
teith
1863 Lee, John, Elmbank, Dollar
1877 Lee, Hon Lord, Duddingston House,
Edinburgh
1884 Lees, David, Pitcoctie, Cupra
1885 Lees, John, late Warrington Hadding-
ton
1868 Lees, Richard, Drinkstone Hawick
1878 Le-gut Alex, Killyleoch, Dunscore,
Dumfries
1864 Leishman, T, 25 Park Terrace Stirling
1883 Leitch, Arch K, Inchsteilly, Forres
1877 Leitch, Simon, Factor, Edwickbank,
Shapinsay, Orkney
1860 Leith, Major Thomas, Pitmedden,
Oyne
1875 Lethhead James, 159 Dalkeith Road,
Edinburgh
1878 LEVING, Hon C S B H Kincaid,
Lennor Castle, Lennorstown
1878 Lennor, David, Merchant, Dumfries
1873 Lennor, James, Shanton, Luss
1865 Leny, W Macdipine, of Dilswinton,
Dumfries
1876 Leslie, A F, Braco, Keith
1885 Leslie, David Lochhills, New Mach-
1880 Leslie, G Arbuthnot, of Warthill,
Aberdeen
1862 LEVING, Hon George Waddell, Leashe
House Leslie
1877 Leslie, James, Tharn Blunquarie
1873 Leslie Robert C, of Luttich, Dun-
keld
1870 Leslie Thomas W, Walton, Blan-
gowrie
1863 Leslie, James, Borchill, Inthgow
1884 Leys, James, Lutterbeg, Inchmilly
1864 Liddell, Wm H, Winter, Castle
Douglas
1875 Liddell, Henry L, Birt, Penthill
Abbey, Perth
1877 Lindsay, William Francis, St An-
drews
1885 LINDSAY, Right Hon the Earl of, Kil-
conquhar House Fife
1878 Lindsay, Hugh, Macdowall, Shanker-
ton
1878 Lindsay, Jas, Whitecastles, Locker-
bie
1884 Lindsay, Jis Wester Hyndrie, Stobo
1857 Lindsay, James (late Kilmunbach,
Campbeltown) New Zealand
1845 Lindsay, John Thornhill, Newington
1878 Lindsay, John V, Whitehope, Bellin-
1884 Lindsay, Robt, Curator, Royal Botanic
Gardens Edinburgh
1857 Lindsay, Thomas, Kilmington Mill,
Noblehouse
1878 Lindsay, Thomas, Townend, Cugie,
Kilmunrock
1875 Linn, William 3 Park Terrace, New
castle on Tyne

Admitted

- 1883 Linton, John, Mains of Aberarder
Inverness
1873 Linton, Simon, Glenmath, Peebles
1878 Linton, W. I., Mount Benzer, Belkirk
1883 Lithgow, E., Belshiel, Greenlaw, Duns
1860 Little, James, Sark Tower, Crombie
1878 Little, James Church, Burnfoot, Langholm
1884 Little, John M., Charleshill, Langholm
1878 Little, William, High Bogue, Twynholm
1883 Littlejohn, Alex., of Inveicharron, Ardrey
1876 Littlejohn, William, Whitemyres Old Shene Road, Aberdeen
1879 Livingston John Brie of Cluny, Tullypowrie, Perthshire
1863 Livingstone Thos L. kenton, of West Quarter Falkirk
1875 Lloyd Thomas, of Mmaid Castle, Inveraray
1882 Locke Withew, Arthurbie, Buirheid
1878 Lockhart, James, Muns of Anies, Stranraer
1884 Lockhart, Major Gen. Grime, of Castle Hill, C.B., Cambusnethan House, Wishaw
1885 Lockhart, Peter, Sirringle Estate Office, Ecclefechan
1866 Lockhart, Robert, jun., 10 Polwarth Terrace Edinburgh
1872 LOCKHART Sir Simon M., of Lee and Curwith Bart, Lanark
1870 Lockhart W. Elloit, of Lothwickbric Branholme Hawick
1853 Locke Will, West Morrison Eriston
1879 Loder, Robert, W. Littlebury, Towcester
1884 Logan A. S., Fernes Castle, Reston
1878 Logan, David, Fernbank, Stranraer
1884 Logan (C.B.W.S.), 23 Queen Street, Edinburgh
1876 Logan J. W. Bow of the Hill, Berwick
1885 LORD DUNDEE Most Noble the Marquis of, Seaham Hall, Seaham Harbour
1872 Loney Peter, Muichmont Duns
1883 Longmore, Leith E., Rennie, Banff
1881 Lonsdale, Claud, Rose Hill, Carlisle
1885 LOPPS Sir Massey, Bart., 28 Grosvenor Gardens London
1865 Lorimer J., late Achnessan, Fighna Brae
1843 Lorimer, T. W., Newton Stewart
1860 Lorimer William, Blyth, Banquhal
1867 LORD DUNDEE Most Noble the Marquis of, K.T.
1869 LOTHLIAN, Most Noble the Marquis of, K.T., Monteviot, Edinburgh
1883 Lothian James, Land Agent and Factor, Campbeltown
1874 Lothian Maurice John, Glenlora, Lochwinnoch
1882 Loudoun, Archd. Loudoun Arms Hotel, 259 Duke Street, Glasgow
1873 LOTHIAN, Right Hon. Lord, Beaumont Castle Beaulieu
1875 Love Alexander, Margaret's Mill, Kilmakolm
1874 Love James, 12 St James Street, Paisley Road, Glasgow
1857 Love, Alex., Nether Boyndlie, Fraserburgh
1861 Lowe, Robert General Agent, Perth
1880 Lowndes, Major James, Junior Limited Service Club, London
1885 Lowrie, William, Charlswal, St Boswells, —*Five Life Members*
1871 Lowson, William (of Balthayock, Perth), Gray Bank Dundee
1885 Luke, John Herdwood, Denny
1880 Lumsden, G. Leslie Lodge, Inverurie

Admitted

- 1857 Lumsden George, 30 Drumsheugh Gardens, Edinburgh
1877 Lumsden, General Sir Harry B., Belhelvie Lodge, Aberdeen
1869 Lumsden Henry, of Pitcaple, Pitcaple
1877 Lumsden, Hugh Gordon, of Auchindoun, Aberdeen
1875 Lumsden, James, of Arden, Alexandria, N.B.
1883 Lumsden, J. W. W., 30 Drumsheugh Gardens, Edinburgh
1884 Lumsden, J. D., Huntingtowerfield, Perth
1876 Lumsden, William Harry, of Balmedie, Aberdeen
1870 Lusk, And., Lochvale Dumfries
1877 Lusk, Peter, Craigmyle Stranraer
1872 Lyle William, Fergus Duns
1884 Lyle, Wm., Caddonlee, Galashiels
1880 Lyle Chas., Old Montrose, Montrose
1884 Lyle, David, of Gullery, Montrose
1880 Lyle Robert, 10 Wmfred Terrace, Fock Lodge Edinburgh
1884 Lyon John, Letwell Fyfe
1870 Lyon, Thomas A., Whitecroft Lockerbie
1870 MacAdam, Jas. Nichol, late High Tees, Marlborough Wilts
1877 Macadam, John, Blunier, Drymen
1869 Macadam, Dr Stevenson, F.R.S.E., Surgeons Hall, Edinburgh
1884 Macadam, Professor W. Ineson, Surgeons Hall, Edinburgh
1840 Macalister, A., of Loup and Toirisdale
1882 Macalister Ebenezer, of Carbeth Guthrie, Glasgow
1883 MacAlpine, A. N., Minto House Chambers Street Edinburgh—*Botanist to the Society*
1873 Mac Alpine James Tile Manufacturer, Springfield, Strithling
1844 Macandrew, D. W., Railrook, A. Sheldon Road, Torquay
1873 Macandrew, Henry C., Sheriff Clerk, The Castle, Inverness
1882 Mac Ann Alex., Land Steward, Culdeas, Muthill, Perthshire
1862 MacArthur, John, Barbreck, Banker, Inverway
1840 MacArthur, Major Alexander
1842 MacArthur Duncan (late Dunollybegs), New Zealand
1843 Macaulay J., late Kilbride, Caundow
1883 Macaulay, Peter Letwell Row
1845 MacBean, D., Auchtblur Cui Bridge
1871 MacBein, John (late Factors Office, Grantown) New Zealand
1883 Macbearn, W., Cradle Hill Inverness
1871 MacBeath James, Birnie, Thurso
1863 Macbrae, James, of Broadmeadows, Berwick
1878 MacCay, Alex., Kilhill, Stranraer
1867 MacCay, John, Vye, Stoneyhuk
1867 MacCall, Alexander, Rock Hall Mains, Collin Dumfries
1870 MacCall, George, Burance, Lockerbie
1870 MacCall, James, of Catloch Monave
1868 MacCall, Professor James, Veterinary College, Glasgow
1846 MacCall, Henry, of Daldowie, Glasgow
1874 MacCallum, Alex., Inglis Chemist and V.S., 18 Grassmarket, Edinburgh
1872 MacCallum, Dan, Cienmachrie, Oban
1880 MacCallum, Colonel Kellie, of Biaco, Gorden Highlanders
1879 MacCallum, James, Fendoch, Crieff
1861 MacCallum, John, Duncan Street, Thurso
1887 MacCallum, Wm. R., Ballig, Creff
1875 MacCameron, John, Kironnae, Stranraer

Admitted

- 1864 M'Candlish, Jn. M'Gregor, W.S., 27 Drumsheugh Gardens, Edinburgh
 1871 M'Cash, John, Grain Merchant, Perth
 1873 M'Caull, Peter, Dykedale, Dunblane
 1851 M'Caw, Alexander (late Ardlochan, Kirkoswald), New Zealand
 1857 M'Chlery, Henry, London
 1851 M'Clean, Alex. H., Auchneal, Stranraer
 1880 M'Clellan, Rev. John Brown, Royal Agricultural College, Cirencester
 1878 M'Clew, David Andrew, Chapel Bossan, Stranraer
 1878 M'Clure, William, Banker, Lockerbie
 1879 M'Coll, Duncan, Clachan, Lismore, Oban
 1856 M'Combie, Robert, Upper Farmtown, Lynturk, Whitehouse, Aberdeen
 1840 M'Combie, William, of Easter Skene, Skene, Aberdeen
 1876 M'Conchie, Andrew, Mains of Penninghame, Newton-Stewart
 1876 M'Conchie, John, Carsewilloch, Cree-town
 1858 M'Counach, Charles, Cairnballoch, Alford, Aberdeen
 1808 M'Connell, Frederick, of Blackyett, Annan
 1874 M'Connell, William, of Knockdolian, Girvan
 1842 M'Connell, John, Richmond, Surrey
 1837 M'Connell, John A., Chapelheron, Whitehorn
 1856 M'Connell, Robert, V.S., Castle-Douglas
 1878 M'Connell, Thomas M., V.S., Wigtown
 1876 M'Connell, Primrose, Ongar Park Farm, Ongar, Essex—*Free Life Member*
 1882 M'Connell, William, Glasnick, Kirkcowan
 1876 M'Cormack, John, Lochenkit, Cursuck Dalbeattie
 1881 M'Corquodale, David, Banker, Carnoustie
 1860 M'Corquodale, William, Jeanie Bank, Seone, Perth
 1877 M'Cosh, Peter, Cairngawn, Drumore, Kirkmaiden
 1862 M'Cowan, Alex., of Newtonalrds, Holywood, Dumfries
 1884 M'Cowan, George, Glenmanna, Pentpoint
 1882 M'Cowan, Robert William, Conservative Club, Glasgow
 1877 M'Cracken, A. E., Gillespie, Glenluce
 1884 M'Cracken, Robt., The Creamery, Dunraff
 1878 M'Cracken, William, Prof. Royal Agricultural College, Cirencester—*Free Life Member*
 1866 M'Creath, H. G., Gallagat House, Norham on Tweed
 1850 M'Culloch, Alexander, of Glen, Gatehouse of Fleet
 1885 M'Culloch, Allan, Kilbride, Glenfeochan, Oban
 1870 M'Culloch, David, Bank-Agent, North Berwick
 1870 M'Culloch, John, Glenhead, Stranraer
 1876 M'Culloch, Peter, Whitefield, Glenluce
 1809 M'Culloch, R. C., 7 Broughton Place, Edinburgh
 1849 M'Culloch, Walter of Ardwil, Gatehouse of Fleet
 1858 M'Diarmid, Charles A., Rockwood, Killin
 1884 Macdiarmid, Donald, Bank of Scotland, Aberfeldy
 1858 M'Diarmid, D. A., Oban
 1858 M'Diarmid, Duncan, Camusericht, Rannoch

Admitted

- 1851 Macdiarmid, H., Factor, Tiree, Tobermory
 1882 Macdiarmid, Robert, Castles, Lochawe
 1838 M'Donald, Dr Alex., Prince Edward's Island
 1841 Macdonald, Alexander, Wine Merchant, Inverness
 1854 Macdonald, A., of Edenwood, Cupar-Fife
 1874 Macdonald, Alex., Nether Largie, Lochgilphead
 1883 Macdonald, Alex., Balintore, Bogroy
 1833 M'Donald, Alex. (M'Donald Bros.), Portsoy
 1884 Macdonald, Alex., Portree
 1886 Macdonald, Alex., Kindraught, Fordyce
 1867 Macdonald, Alexander, Grain Merchant, Lockerbie
 1885 Macdonald, A. C., Nether Largie, Lochgilphead—*Free Life Member*
 1874 Macdonald, Alex. Ronald, Ord, Isle Ornsay, Broadford, Skye
 1841 Macdonald, Major-Gen. Alister M'lan, 27A Park Lane, London, W.
 1883 Macdonald, Allan, Solicitor, Inverness
 1883 Macdonald, Andrew, Charleston, Inverness
 1855 Macdonald, Archd. Burns, of Glencoe, Perth
 1853 Macdonald, A. S., Sunnyside, Invergordon
 1888 M'Donald, Charles, Knocknagael, Inverness
 1860 Macdonald, D., Athole Arms Hotel, Blair Athole
 1808 M'Donald, Donald, Culcraggie, Alness
 1883 Macdonald, Donald, 54 George IV. Bridge, Edinburgh
 1872 Macdonald, Donald, Tormore, Broadford, Skye
 1863 Macdonald, D. P., Invernevis, Fort-William
 1884 Macdonald, Harry, Viewfield, Portree
 1871 M'Donald, J., Comrie Farm, Aberfeldy
 1868 Macdonald, James, 63 Princes Street, Edinburgh
 1851 Macdonald, James, Vallay, Lochmaddy
 1851 Macdonald, John Macdonald Stewart, Monachyle, Lochearnhead
 1875 M'Donald, John, Newton, Lochmaddy
 1873 Macdonald, John, Porterfield, Renfrew
 1870 M'Donald, John, Belmore, Garelloch, Helensburgh
 1850 Macdonald, Montague, jr. of St Martins, Perth
 1861 Macdonald, Peter, The Douglas Hotel, Brodick
 1836 Macdonald, R. B., Granton Mains, Edinburgh
 1868 Macdonald, R., Cluny Castle, Aberdeen
 1830 Macdonald, Roderick C., of Castle Teirm, Prince Edward's Island
 1861 Macdonald, Wm., of Balmakilly, Blairgowrie
 1874 Macdonald, William, *North British Agriculturist*, 377 High Street, Edinburgh
 1871 M'Donald, William, Woodlands, Perth
 1888 M'Donald, William, Carswell, Alves, Elgin
 1800 Macdonald, W. S., The Priory, Newhaven Road, Edinburgh
 1844 Macdonald, Lieut.-Col. William Macdonald, of St Martin's, Perth
 1846 Macdonell, Aneas Randal, of Morar, Fort-William
 1882 Macdonell, R. Talbot, Morar, Fort-William
 1865 M'Donnall, James, of Logan, Stranraer

Admitted

- 1877 Mackay, Alex Forbes, Carskey House, Campbelltown
 1878 Mackay, Arch M, Bruchag Rothesay
 1878 Mackay, David Hurlledale, Lummer tree, Ainan
 1872 Mackay, George G, Grangemouth
 1879 Mackay, George Grant, of Glengloy, Kingussie
 1877 Mackay Henry, Shandwick Mams, Nigg, Ross shire
 1870 Mackay, H M S, Banker, Elgin
 1882 Mackay John, late of Herriedale, Dalbeattie
 1872 Mackay, John S, Banker, Grangemouth
 1884 Mackay, Robert, 97 Broughton Street, Edinburgh
 1870 Mackay, R J, Burgie Lodge, Forres
 1875 Mackay, Thomas Westwood, Coventry
 1874 Mackay, Wm, Melness, Pimces Street, Thurso
 1877 McKay, William, Brucefield, Portmahomack, Ross shire
 1884 McKay, W B, Inverlmond, Gramond
 1859 McKean, Robert, Lumloch, Bishopbriggs
 1880 McKeand, P yr of Ames Scour, Dunnean Mull
 1855 McKenna Neil Inverray
 1860 Mackehmie, James, Blairretn House, Tivulit
 1851 McKich, John, Upper Bulland, Balfron
 1878 McKellor John, Crossrig, Tubert
 1878 McKellor Peter, Crossrig, Tubert
 1880 Mackenzie Allan R, jr of Kintail, Clunes Kirkhill, Inverness
 1882 Mackenzie, Sir Alexander M, of Delvine, Bnt, Dunkeld
 1846 Mackenzie A, of Seftwell, 19 Charlotte Square, Edinburgh
 1869 Mackenzie, A Kincaid of Raveling, 19 Grosvenor Crescent, Edinburgh
 1875 Mackenzie Alex, Silverwell, Inverness
 1878 Mackenzie Alex, Tomich, Beaulie
 1872 Mackenzie, Andrew, Dalmoire Distillery, Ainess
 1879 Mackenzie, A D (Mackenzie & Moncur), Upper Grove Place, Edinburgh
 1869 Mackenzie, C J, of Portmore, Eddinston
 1888 Mackenzie, Colm Lyon, of St Martins, Braelmwell, Invergordon
 1844 Mackenzie, Daniel, jun, Merchant, Glasgow
 1882 Mackenzie, Donald, Glenloy, Fort William
 1884 Mackenzie, D F, Morton Hall, Lakerston
 1882 Mackenzie, Felix Calvert Forres
 1865 Mackenzie James Fowler, of Allangrunge Munloch
 1868 Mackenzie Sir James Dixon, of Seatwell Bait Mountgerald, Dingwall
 1871 Mackenzie James T, of Kintail and Glenmuich, Ballater
 1848 Mackenzie, John, New Club, Edinburgh
 1865 Mackenzie, John, Duchlaga, Cove, Greenock
 1872 Mackenzie, John, of Knapoch, Oban
 1879 Mackenzie, John, W.S., 16 Royal Circus, Edinburgh
 1868 Mackenzie, Jn Munro, of Mormish, Garion Tower, Wishaw
 1886 Mackenzie, John A, Solicitor, Lockertie
 1848 Mackenzie, John Ord, of Dolphinton, W.S., 9 Hill Street, Edinburgh
 1854 Mackenzie, Sir K S, of Garloch, Bart, Conan House, Ross shire

Admitted

- 1879 Mackenzie, Murdo (late Banker, Iain), America
 1879 Mackenzie, Neil, Northfield Bannockburn
 1874 Mackenzie, Nigel Banks, British Linen Bank, Fort William
 1838 Mackenzie, Robert D, of Caldavan, Alexandria
 1885 Mackenzie, R W R, Stormontfield, Perth
 1865 Mackenzie, Roderick G, of Flowerburn Fortrose
 1846 Mackenzie, Thomas, of Ord, Beaulie
 1886 Mackenzie, Thomas, Carron Strathspey
 1883 Mackenzie, William, Delny, Delny Station, Ross-shire
 1883 Mackenzie, William, Kinnardie, Dingwall
 1886 Mackenzie, William Dalziel, of Farr, Inverness
 1857 McKerral, A, Brunerican, Campbelltown
 1882 McKerrall Robert Muir of Hillhouse, Dundonald Ayshire
 1874 McKerrrow And, East Halton, Ulooby, Lincolnshire
 1876 McKerrrow, M S, Boreland of Southwick, Dumfries
 1878 McKennie, James, Cunningham House, Munkh
 1885 Mackessack, Charles, Nann
 1882 Mackessack George R, jr of Airdge and Roseisle, Forres
 1885 Mackessack, James, Frouside, Forres
 1887 Mackessack, John, Balnaffery, Forres
 1874 Mackessack, John, Kinloss Forres
 1882 Mackessack, Peter Hardy, Westerfolds, Elgin
 1864 Mackessack, Robert, of Airdge and Roseisle, Forres
 1882 Mackessack, Robert Hardy, Newton of Staithers, Forres
 1874 McKie, Alexander, Banderath, Stirling
 1875 McKie, Andrew, Bluket, Crockettford, Dumfries
 1880 Mackie, George, of Dunjag, Castle Douglas
 1878 McKie, James H J, Invermay, Bridge of Dain
 1880 Mackie, James, Lewes, Fyvie
 1864 Mackie, James Logan, Ravelston, Great Western Road, Glasgow
 1860 Mackie, John, Salkshields, Ecclefechan
 1881 McKie, H B, Fricland, Eskme, Glasgow
 1878 McKie, John, of Bargaly, Castle Douglas
 1882 Mackie, John Gludstone, of Auchencann, Castle-Douglas
 1881 Mackie, Peter, East Kinkon, Auchterader
 1857 Mackie, Robert, Draffen House, Stewarton
 1871 Mackie, William, Petty, Fyvie
 1879 Mackill, John (Laidlaw & Co), 53 Waterloo Street, Glasgow
 1883 Macmillan, Pycs Achagour, Nairn
 1869 McKinnlay, John Hadhill, Bathgate
 1878 Macmillan, William, Ardoch, Cardross
 1869 McKinnel, J B A, Dumfries Iron Works, Dumfries
 1878 McKinnel, William, Butterhole, Dalbeattie
 1869 Mackinnon, Lachlan, jun, Advocate, Aberdeen
 1876 Mackinnon, Wm, of Loup, Balnakill Clachau, Kintyre

Admitted

- 1883 Mackintosh, A. D., of Mackintosh, Moy Hall, Inverness
 1866 Mackintosh, C. Fraser, of Drummond, M.P., Inverness
 1846 Mackintosh, Eneas, of Balmespick, Inverness
 1844 Mackintosh, Eneas W., of Raigmore, Inverness
 1844 Mackintosh, A., of Holme, Inverness
 1866 Mackintosh, Dr C. H. (of Dalmonzie), Morden Hall, Torquay
 1840 Mackintosh, George Gordon, Richmond House, Twickenham, Middlesex
 1888 Mackintosh, Hugh, Ironmonger, Inverness
 1869 Mackintosh, James, of Lamancha, Lamancha
 1888 Mackintosh, James, 3 High Street, Inverness
 1877 Mackintosh, John, South Kinrara, Aviemore
 1874 Mackirry, General Elliot, of Birkwood, Leamnahagow
 1860 M'Knight, Alexander (late of Barlechan, Dalbeattie), London
 1878 M'Lachlan, Archd., 32 Queen Street, Stirling
 1875 M'Lachlan, Colin, Drums, Greenock
 1873 M'Lachlan, Colin, Woodend, Helensburgh
 1874 M'Lachlan, D., Lochgilphead
 1872 MacLachlan, James, Doune Lodge, Burn of Cambus, Stirling
 1886 MacLachlan, John, of MacLachlan, 12 Abercromby Place, Edinburgh
 1876 MacLae, Alex. Crum, of Cathkin, 149 St Vincent St., Glasgow
 1853 MacLagan, Sir D., M.D., Prof. of Medical Jurisprudence, University of Edinburgh, 28 Heriot Row
 1847 MacLagan, Peter, of Pumpherston, M.P., Calder Hall, Mid-Calder
 1873 MacLagan, Robert Craig, M.D., 5 Coates Crescent, Edinburgh
 1849 MacLaine, George, late 6 Albert Drive, Glasgow
 1870 MacLaune, Murdoch G., of Lochbule, Oban
 1881 M'Laren, Alexander, 11 Assembly Street, Leith
 1879 M'Laren, Charles, Cally Lodge, Dunkeld
 1873 M'Laren, James, Little Sauchie, St Ninians
 1871 M'Laren, James, Solicitor, Crieff
 1885 M'Laren, J. T., Kennet, Alloa
 1855 M'Laren, John, Retreat House, Scone, Perth
 1859 M'Laren, John, Brae of Monzievaird, Crieff
 1880 M'Laren, John, Midland Engine Works, Hunslet, Leeds
 1859 M'Laren, Joseph (late Greenhead of Arnot, Kinross), Australia
 1870 M'Laren, William, Pittendrigh, Melkior
 1876 M'Larin, Dugald, Dalbeattie
 1875 M'Latchie, William, Fallygreggan, Campbeltown
 1877 M'Lean, Alex. T., of Ardour, Fort-William
 1875 M'Lean, Arch. John, of Pennycross, Carsaig, Pennyghael, Oban
 1875 Maclean, Chas., Milton, South Uist, Lochmaddy
 1885 M'Lean, David, Estate office, The Crooks, Coldstream
 1861 Maclean, Duncan, Belnollo, Crieff
 1854 Maclean, H. F., W.S., Carnwath

Admitted

- 1875 Maclean, Hugh, of Dunbae and Fareure, Stranraer
 1878 M'Lean, James, Auctioneer, Annan
 1860 Maclean, James, Clerk of Supply, Wigtown
 1854 Maclean, John D., of Lazenby Hall, Penrith
 1831 Maclean, J. Grant, Norwood Lodge, Bridge of Allan
 1823 Maclean, Dr Lachlan, Columba Cottage, Oban
 1853 Maclean, Roderick, Ardross, Alness
 1846 Macleay, Alex. D., Conservative Club, London
 1839 Macleay, Kenneth, 1 Portland Place, London, W.
 1875 M'Leish, Dan., Bank of Scotland, Fort-William
 1881 M'Leish, Dan., Wester Keillor, Methven, Perthshire
 1877 MacLeish, G. S., Wester Drumthert, Spittalfield, Dunkeld
 1894 M'Leish, James, Byres of Murtilly, Perth
 1880 MacLeish, William, Town-Clerk, Perth
 1871 Maclellan, David, of Marks, Kirkcubright
 1884 Maclellan, Keith, Melfort, Lochgilphead
 1883 M'Lellan, Robert, 206 Ingram Street, Glasgow
 1837 Maclelland, T., North Balfem, Kirkinner
 1875 MacLennan, Alex., Leanassie, Lochalsh
 1805 MacLennan, Donald, Hilton, Muir of Ord
 1874 Macleod, D. D. M'L., late Raebank, Nairn
 1883 Macleod, James M., Ivy House, Collingham, Newark
 1849 Macleod, John N., of Kintarbert, Glen-Saddell, Campbeltown
 1884 McLeod, John, Balmagowan Arms Hotel, Ardgay, Ross-shire
 1839 Macleod, Norman, of Macleod, Dunvegan Castle, Isle of Skye
 1854 Macleod, B. B. Eneas, of Cadboll, Invergordon Castle, Invergordon
 1875 Macleod, Captain, of Orbst, Skye
 1874 M'Master, Allan, Glenhead House, Stranraer
 1871 M'Master, Hugh, Blairbui, Port-William
 1878 M'Master, Jas., Currochtree, Stranraer
 1875 M'Master, John, Culhorn Mains, Stranraer
 1875 M'Master, Wm., Challock, Dunragit
 1883 MacMillan, E. H., Caledonian Bank, Inverness
 1870 M'Millan, John, of Glencroah, Moniaive
 1836 M'Min, Thomas M'C., Wellwood, Muirkirk
 1830 M'Minnes, Henry H., Farington, Preston—Free Life Member
 1854 M'Minn, F., 1 Graham Street, Edinburgh
 1870 M'Monies, James, Eastwell Park, Ashford, Kent
 1882 MacMorran, Robert, Kinlochspelve, Lochbui
 1872 M'Murich, James, Stuckievnullich, Arrochar
 1873 M'Murich, Peter, Glen Allan, Dunblane
 1865 M'Nah, Alex., of Technmury, Middletonkerse, Menstrie
 1873 M'Nab, Donald, Duchlage, Luss
 1873 M'Nab, James, Glenochul House, Menstrie

Admitted

- 1884 M^cNab, John, Glenochil House, Menstrie
 1873 M^cNab, John, Bracklin, Callander
 1883 M^cNab, John, Glenmavis, Bathgate
 1879 M^cNab, R W, Union Bank of Scotland, Dalbeattie
 1882 M^cNab, Robert, Luss Hotel, Loch Lomond
 1887 M^cNab, William, North Rag, Haddington
 1865 Macnaghten, Stenart, Batterne Manor House, Southampton
 1886 M^cNae, Robert, V's, Dumfries
 1876 M^cNair, Robert, Westertown, New Kilpatrick
 1857 M^cNaughton, Alex, Remony, Kenmore
 1859 M^cNaughton, Alex, Kilhn
 1870 M^cNaughton, Daniel, 79 Mark Lane, London, E.C.
 1854 M^cNaughton, J, of Smithfield, Ayr
 1871 M^cNaughton, John, Inverlochlaug, Balquhadder
 1879 M^cNaughton, Robert, of Cowden, Comrie
 1871 M^cNaughton, Wm, Raechip, Dunkeld
 1848 Macneal, H, of Uxdale, Campbelltown
 1882 M^cNeillage, Arch, jun, Secretary, Clydesdale Horse Society, 46 Gordon Street, Glasgow
 1860 M^cNeill, Maj Gen Sir John Carstairs, of Colonsay, V C, K C M G, K C B
 1870 M^cNellie, Alex, Redcastle, Dalbeattie
 1873 M^cNicol, John, Garvie, Culnathave
 1876 M^cNicol, John, Achandaurch, Ballachulish
 1857 M^cNiven, Alex, Inneshevan, Kilhn
 1876 Maconchy, John Arthur, Kildare Street Club, Dublin—*Free Life Member*
 1857 M^cPhail, Alex (late Drumgare, Campbelltown), America
 1883 M^cPhail, John, Scallisdale, Craignue, Mull
 1878 MacPhedran, J. M., of Craigbet, Bridge of Weir
 1878 Macpherson, Allan, of Blairgowrie
 1864 Macpherson, A H, Tarbert Hotel, Loch Lomond
 1883 Macpherson, C E W, C.A., 28 St Andrew Square, Edinburgh
 1878 Macpherson, Charles J. Brewster, of Beleville, Kingussie
 1871 Macpherson, Donald, Glen Nevis, Fort-William
 1875 M^cPherson, Donald, 95 Finlay Drive, Dennistoun, Glasgow
 1876 M^cPherson, Donald, Queen's Hotel, Rothesay
 1883 Macpherson, Donald, Wolfelee, Hawick
 1865 Macpherson, Duncan, Kingussie
 1865 Macpherson, Duncan, of Glendoll, Kilgraston, Bridge of Earn
 1857 Macpherson, Colonel Even, of Cluny Macpherson, Cluny Castle, Kingussie
 1862 Macpherson, George G, Huntly Hall, Nairn
 1857 Macpherson, J, Lord Chamberlain's Office, London
 1860 Macpherson, J (late Kilhumbly, Kingussie), Ontario, Canada
 1883 Macpherson, James, Maam, Inveraray
 1876 Macpherson, John, Achlochrach, Glenrinnas, Duftown
 1883 Macpherson, John, Invercargill, New Zealand
 1866 Macpherson, John, Blantyre Farm, Glasgow
 1870 Macpherson, Colonel Lachlan, of Glen-trium, Newtonmore

Admitted

- 1883 M^cPherson, Professor Norman, LL D, 2 Randolph Clift, Edinburgh
 1883 Macqueen, A Tulloch, Coulmore, Inverness
 1882 M^cQueen, David, Factor, Wishaw Estate, Wishaw
 1884 Macqueen, Hope, Builder, Abington
 1857 M^cQueen, J, of Boquhapple, Thornhill, Stirlingshire
 1870 M^cQueen, James, of Crofts, Dalbeattie
 1873 Macqueen, James, Divers Wells, Alloa
 1870 Macqueen, Jas, Princes Street, Perth
 1879 M^cQueen, John, Oakwood, Selkirk
 1863 MacRae, A D, Ruthven, Kingussie
 1860 Macrae, Don, 155 Hill Street, Garnet Hill, Glasgow
 1874 M^cRae, Dun A, of Monar, late Munton House, Inverness
 1874 MacRae, Rod, Mains of Erchless, Beaulj
 1878 M^cRaw, Donald, Moultaive, Alness
 1883 M^cRobbie, Alexander, Sunnydale, Aberdeen
 1871 M^cRosty, Jas, Solicitor, Chief
 1879 MacRitchie, David, C.A., Easter Logie, Blairgowrie
 1876 M^cTaggart, John, Culnaightry, Castle-Douglas
 1883 MacTavish, Alex, Implement Maker, Inverness
 1857 M^cTavish, Duncan (late Dalmore, Campbelltown), America
 1885 MacTavish, D A, Solicitor, Johnstone
 1848 Mactear, Alexander Walker, late of Durris, Aberdeen
 1878 M^cTher, John, of Ladyfield, Dumfries
 1880 M^cTurk, Alex, Commercial Hotel, Banquhar
 1878 M^cTurk, David, Rascariel, Castle-Douglas
 1878 M^cTurk, William A, Bulae, Dalry, Galloway
 1878 M^cWhinnie, Alex, Anyolland, Port William
 1884 M^cWilliam, Andrew, 88 Queen Street, Glasgow
 1884 M^cWilliam, John, jun, Inveigron, Artochar
 1876 M^cWilliam, Mrs, Aberdeen
 1876 M^cWilliam, James, Stoneytown, Keith
 1870 M^cWilliam, Robt, late Craigmare, Stranraer
 1881 Mack, Joseph, of Berrybank, Reston
 1882 Maddever, Dr John Coumbe, 19 Battery Place, Rothesay
 1875 Maddison, Henry, The Landens, Darlington
 1870 Mam, Geo Agnew, Portland Square, Carlisle
 1874 Mam, Jas A R (A & J Mam & Co), Gordon Street, Glasgow
 1879 Mam, R E (A & J Mam & Co), Possil Park, Glasgow
 1877 Matland, David, of Dundriennan, New Club, Edinburgh
 1871 Matland, Henry, Balmungo, St Andrews
 1867 MATLAND, Sir James R Gibson, of Barrton, Bart, Craigmend, Stirling
 1868 Matland, James, jun, Little Mithlath, Mithlath
 1884 Matland, John, East Balhagarly, Inverurie
 1879 Matland, Col Keith Ramsay, H M I S, 26 Castle Terrace, Edinburgh
 1875 Matland, Robert, Balhagarly, Inverurie
 1888 Matland, Wm, Alton of Coynsach, Mintlaw

Admitted

- 1889 Malcolm, George, Factor, Inverpary
 1884 Malcolm John M R C V S, Birmingham—*Free Life Member*
 1840 Malcolm, W E, of Burnfoot, Langholm
 1878 Malcolm, William Matland Auchnacraig House, Isle of Mull
 1880 Malcolm, Wm Taylor, Dunmore, Stralings
 1860 Mangin, W N, Preston, Chathill, Northumberland
 1861 Manjies George, Givendale, Ripon, Yorkshire
 1882 Mann, Alex., Ballintomb Grantown
 1882 Mann Robert J, Skelton, Boroughbridge
 1882 Mann William, S S C, 110 Prince's Street, Edinburgh
 1883 Manns, C R C E, Inverness
 1833† MAXSFELD, Right Hon the Earl of, K T Coates Palace, Perth
 1869 Mansfield Jas L, Advocate 8 Chester Street, Edinburgh
 1886 Manson Anderson Lathir, Lerwick
 1872† MAR and KELIE Right Hon the Earl of, Alloa Park, Alloa
 1884 MARJORIBANKS Hon Edward, M P, yr of Gussachan Beaulieu
 1886 Marjoribanks, John, Campdown, Hadington
 1877 Mark, John Craugend Stow
 1877 Mark, Robert Agricultural Hall, Leven Street Edinburgh
 1883 Marri, Alex., Dalroos, Fort George Station
 1876 Marr John, Cambroge, Old Mel drum
 1864 Marr, J A, late of Alderston, Mid Calder
 1865 Marr, William Smith, Upper Mill, Larves
 1883 Marri, Wm S, jun, Upper Mill, Larves
 1884 Marriott Thos E, Newnham House, Dinty
 1873 Marryat, George Selwyn, Shedfield Grange, Botley, Hants
 1882 Marshall, Francis, of Park, Girvan
 1866 Marshall James (Marshall sons, and Co), Gainsborough
 1887 Marshall, James Burt, Luncey, Lerth
 1847 Marshall, John Clebrig, Laing
 1877 Marshall John (Alexander Jack & Sons), Maybole
 1880 Marshall, John, Sandyford, Holytown
 1885 Marshall, Matthew, Stranraer
 1886 Marshall Robert, Toftlouse, Tibbermuir Perth
 1860 Marshall, Rev Theodore, Caputh Mure Dunkeld
 1879 Marshall Walter, of Lochmaloney, Cupar Fife
 1885 Marshall, William, Morton Mains, Thornhill
 1873 Marshall, Wm Hunter, of Callander, 25 Heriot Row Edinburgh
 1887 MARTIN, Andrew, Lord Provost of Perth
 1875 Martin, Donald T, of Gargenta, Irvine
 1877 Martin Edward, 11 Kew Terrace, Kelvinside Glasgow
 1868 Martin, James, Springbank Terrace, Aberdeen
 1879 Martin, Jas., Priestfield, Pitlessie, Ladybank
 1865 Martin James, The Grange, Bervie
 1874 Martin, John Bechwood Mains, Corstorphine
 1868 Martin, John, Hamilton

Admitted

- 1860 Martin John Docharn, Boat of Garten, Strathspey, Inverness-shire
 1867 Martin, John M of Auchendennan, Alexandria, N B
 1878 Martin, Thos Murryhill Thornhill
 1880 Martin, William Dardaroch, Dumfries—*Free Life Member*
 1886 Missie W H, Seedman, 1 Waterloo Place, Edinburgh
 1879 Masson, Rev Alex., The Manse, Kirkcubbin
 1874 Masson, John, Tobermory
 1875 Mather, Edward, The Lee Edinburgh
 1874 Mather, John Arres Delmea, Nairn
 1875 Mather Wm, Kirkhill, Newton Mearns
 1887 MATHEW Sir Kenneth J of Ardross, Bart, Ardross Castle Ayrshire
 1875 Matheson Daniel, Commercial Bank, Lockerbie
 1871 Matheson, Kenneth Dunfermline
 1887 Matheson, William, Newton Evanton
 1884 Matthew, J M, yr of Auchmague, Perth
 1871 Matthew P M, 32 Coates Gardens, Edinburgh
 1878 Matthews Andrew Baird, British Linen Bank Newton Stewart
 1885 Matthews, Jas Aberdeen
 1883 Matthews, Wm Newton Stewart
 1883 Mayor Wm Easterton, Elgin
 1884 MAXWELL Hon B C, Everingham Park York
 1877 Maxwell Captain Alfred B Constable, of Terregles, Dumfries
 1870 MAXWELL Sir John R Heron, of Springkell, Bart Ecclefechan
 1865 Maxwell, Francis, of Gribton, Dumfries
 1873 Maxwell, George, of Broomholm, Langholm
 1878 Maxwell, George, of Glenlee, New Galloway
 1869 Maxwell General Harley, of Putrack, Dumfries
 1838 MAXWELL STUART, Hon Henry Constable, of Traquair, Innerleithen
 1877 MAXWELL Sir Herbert Lustace, of Monreith Bart, M P, Whauphill N B
 1878 Maxwell, James, Screele Castle Douglas
 1880 Maxwell, James, Glencorse Mains, Milton Bridge
 1880 Maxwell, John Coachbuilder Kelso
 1882 Maxwell, Joseph Seedman Thornhill
 1867 Maxwell, Maxwell Hyslop of The Grove, Dumfries
 1879 Maxwell Wellwood, of Kirkennan, Dalbeattie
 1886 Maxwell, Wellwood, of the Forest, New Galloway
 1830† Maxwell, Wellwood H, of Munches, Dalbeattie
 1875 Maxwell, W J, Terregles Banks Dumfries
 1881 Maxwell, William, Baraskomel, Campbeltown
 1886 MAXWELL, Sir W F, of Cardoness, But Grtthouse
 1887 Maxwell, William, of Donavoured, Pitlochry
 1875 Maxwell, William Hall, of Dargavel, Brechin
 1873 Maxwell Wm Jardine, yr of Munches, Terrington, Dumfries
 1879 Meade Waldo, E W, Barmoor Castle, Beal
 1875 Mearns Rev Duncan G, Oyne Manse, Aberdeenshire
 1869 Mears, Wm, 24 Buccleuch Street, Edinburgh

Admitted

- 1884 Meggat, Wm, Bueland Twynholm
 1884 Meikle, David, late 10 Kirk Wynd, Falkirk
 1888 Meikle, Jas, Nether Mains, Kilwinning
 1867 Meikle, John, Grongfoot, Lamlithgow
 1879 Meikle, William, East Bonbrud, Lamlithgow
 1861 Mein, Andrew Whytock, of Craesburgh Jedburgh
 1863 Mein, Ben, Roxburgh Barns Kelso
 1860 Mein, A, Hotel de Empereure, Boulevard Dubouché, Nice
 1860 Meldrum, D B, of Kincaid, St Andrews
 1869 Meldrum, J, of Eden Bank, Pittormie, Cupar Fife
 1854 Melrose, Jonathan Coldstream
 1869 Melrose, Patrick West Loch Eddleston
 1886 Melville, G F, Sheriff Substitute, Lamlithgow
 1883 Melville John H Eriden, Falkirk
 1869 Melville, John M Balfour, of Piding, W S
 1877 Melvin, Alexander R, Bonnington, Wileston
 1862 Melvin, Chas, Peniston, Tienent
 1849 Melvin, Jas (Bunnington) 43 Drumshugh Gardens, Edinburgh
 1863 Menzies Duncan, C E, 39 York Place, Edinburgh
 1844 Menzies, Duncan Blurech Lairy
 1870 Menzies, Fergus J, Blackhall Dunfermline
 1841 Menzies, Fletcher V rton—*Secretary of the Society*
 1879 Menzies, James, Coshneville, Aberfeldy
 1869 Menzies, James, of Pitmae, M D, Ballinluig
 1874 Menzies, John, Lochiel Arms Hotel, Sandvie, Fort William
 1870 Menzies, John, Bankhead, Duns
 1849 Menzies, J A Robertson, Dunalastran, New Zealand
 1885 Menzies, John G, 6 Grosvenor Crescent, Edinburgh
 1877 Menzies, Neil James, yr of Menzies, Scots Guards
 1841 Menzies, Sir Robert, of Menzies, Bart, Farleyer, Aberfeldy
 1871 Menzies, Robt, S S C, 5 North St David Street, Edinburgh
 1879 Menzies, Robert, Tinnie, Aberfeldy
 1881 Menzies, R Stewart, of Pitcur, M P, Hallyburton House, Coupar Angus
 1865 Menzies, Wm, Keilator, Crianlarich, Stirling
 1837 Menzies, W J B Stewart, of Chesthill, Aberfeldy
 1885 Menzies, W D, 6 Grosvenor Crescent, Edinburgh
 1880 Menzies, W G Stewart of Cullares, Aikenway Crugellachie
 1870 Menzies, Wm J, W S, 123 George Street, Edinburgh
 1861 Mercer, John, Ardnadam Sandbank
 1870 Merricks H J, 1 Elgin Terrace, Partick, Glasgow
 1870 Merricks, J L, Gunpowder Mills, Roslin
 1870 Merricks, William, 184 Buchanan Street, Glasgow
 1883 Merry, A W, of Belladrum, Beaully
 1883 Merry, Chas J, Belladrum, Beaully
 1876 Merson, James, Craigwillie, Huntly
 1884 Methven, John, 6 Bellevue Crescent, Edinburgh
 1873 Michael, James Dunmore Stirling
 1867 Michie, C Y, Forester, Cullen House, Cullen

Admitted

- 1886 Middlemas, William, Solicitor, Kilmarnock
 1881 Middleton, The Right Hon Lord, Applecross, Lochcaion
 1876 Middleton, Alex, Belmont, Aberdeen
 1876 Middleton, A A, Rosefarm, Invergordon
 1884 Middleton, Geo, Cornston Dingwall
 1884 Middleton, Hilton, Kinner, game Mains, Duns
 1872 Middleton, Jonathan, Davidston, Invergordon
 1872 Middleton, Jonathan, Clay of Allan, Fearn
 1885 Middleton, Capt W F, Bellwood, Perth
 1878 Mill, Allan Dods, Lauder
 1882 Mill, George, 5 Thistle Street, Edinburgh
 1885 Mill, George, Piperhill, Nurn
 1881 Miller, David, Coachbuilder, Crieff
 1877 Miller, James, of Waukmill, Dunfermline
 1864 Miller, James, Mills of Torri, Blair-Drummond
 1884 Miller, James, Firkin, Arrochar
 1884 Miller, John, 16 St Vincent Place Glasgow
 1878 Miller, Robert Alloway Cottage, Ayr
 1871 Miller, Wm, Over Kinfauns, Perth
 1886 Miller, William, Lakehead, Closeburn, Thornhill
 1843 Miller, Captain Alexander Penrose
 1873 Miller, Cohn W, late Wellwood, Bridge of Allan
 1868 Miller, G J, of Frankfield, Shettleston
 1861 Miller, George, Flawburgh Diol
 1883 Miller, Hew, Newstead, Crief
 1861 Miller, John, of Scabster, Thurso
 1874 Miller, John, Seafield, Cullen
 1879 Miller, John, Lochland, Crief
 1843 Miller, O G, of Pittendreech, Dundee
 1864 MILLER, Sir Wm, of Manderston, Bart, Duns
 1877 Millican, John, Wedholm House, Abbey Town Carlsle
 1870 Milne, George, of St Marys, Lordscarmie, Cupar-Fife
 1878 Milhuran, James, Haysfield, Thornhill
 1870 Milligan, John, Auldgrith, Dumfries
 1859 Mills, G, Glenmona Park, Bung Bong, Victoria
 1883 Milne, Alexander, 32 Hanover Street, Edinburgh
 1880 Milne, Alex, Victoria Cottage, Dyce
 1886 Milne, J, Netherston of Pittendrum, Fraserburgh
 1856 Milne, J, Union Bank, Helensburgh
 1859 Milne, Jas (late Meinfoot, Ecclefechan), Amaxa
 1885 Milne, James, 10 Guild Street, Aberdeen
 1867 Milne, John, Inverurie—*Free Life Member, 1873*
 1881 Milne, John, Corn Merchant, Montrose
 1861 Milne, Peter, 12 Archibald Place, Edinburgh
 1886 Milne, Thomas, Gran Merchant, Lockersbie
 1875 Milroy, James Galdenoch Stoneykirk
 1876 Milroy, John, Balgrogan Mains, Stranraer
 1863 Minto, Right Hon the Earl of, Minto House, Hawick
 1870 Minto, John D, Dumfries
 1876 Mitchell, Alex, Balgreen, King Edward
 1887 Mitchell, A, Tillycountry House, Tillycountry
 1883 Mitchell, Alex, Finmonth, Kinglasme
 1848 Mitchell, Andrew, Alloa
 1874 Mitchell, Andw, Drumderf, Inverness
 1875 Mitchell, Andw, Batagan House, Lochalsh

Admitted

- 1878 Mitchell, Andrew, Barcheskile, Kirkcudbright
 1884 Mitchell, Chas., Kintrockat, Brechin
 1861 Mitchell, David, Dalton, Otterlail County, Minnesota, U.S.
 1887 Mitchell, David, Middle Mill, Markinch
 1877 Mitchell, George, Broxburn Park, Broxburn
 1877 Mitchell, Hugh, Banker, Pitlochry
 1857 Mitchell, J., Craigs, Campbeltown
 1850 Mitchell, J., Ballemenach, Campbeltown
 1879 Mitchell, James, Merchant, Montrose
 1874 Mitchell, James E., Culgower, Loth
 1864 Mitchell, James, Banker, Pitlochry
 1878 Mitchell, James, Aldie Castle, Kinross
 1885 Mitchell, James, Auchengray House, Airdrie
 1885 Mitchell, James, Affleck Cake Mills, Dundee
 1885 Mitchell, James, Caies Mill, Kinaldie
 1878 Mitchell, John, Boreland, Hutton, Lockerbie
 1861 Mitchell, John, Fliskmill, Cupar-Fife
 1872 Mitchell, John, Skeddoway, Kirkcaldy
 1878 Mitchell, Joseph, Bankhead, Dalswinton, Dumfries
 1870 Mitchell, Joseph M., Burnscairth Green, Dumfries
 1850 Mitchell, Robert, Brewer, 3 Bonnygate, Cupar-Fife
 1880 Mitchell, Thomas, Howford, Selkirk
 1874 Mitchell, William, late North Ossembley, Lynton, Hants
 1876 Mitchell, William, Mains of Biffie, Old Deer
 1862 Mitchell, William, Merchant, Montrose
 1869 Mitchell, Wm., S.R.C., 11 South Charlotte Street, Edinburgh
 1863 Mitchell, Wm., Ribigill, Tongue, Sutherlandshire
 1881 Mitchell, William, Ledmore, Menmuir, Brechin
 1868 Mitchell, Wm. A., Auchnagathel, Keig, Aberdeen
 1886 Mitchell, William, Dechmont, Uphall
 1861 Moffat, George, West Cottage, Busby
 1860 Moffat, James, Gateside, Sanquhar
 1867 Moffat, James, of Kenervie, British Linen Bank, Castle-Douglas
 1869 Moffat, James, White Lion, Brampton
 1886 Moffat, James, Craik, Hawick
 1862 Moffat, Thomas, Drumbuie, Sanquhar
 1861 Moffat, Wm., General Manager, Great North of Scotland Railway, Aberdeen
 1888 Moffat, Wm., Garwald, Langholm
 1881 Moir, Alexander, Nether Carse, Garrochnock
 1886 Moir, Alexander, Woodside, Aberdeen
 1871 Moir, James, late Banker, Alloa
 1873 Moir, James M'Arthur, of Hillfoot, Dollar
 1876 Moir, Peter, 74 Nicolson Street, Edinburgh
 1885 Moir, Robert, Tarty, Ellon
 1882 Mollison, James, Agricultural Implement Maker, Ruthven, Meigie
 1873 Mollison, James, Pavenham, Bedford
 1883 Mollison, James, jun., Pavenham, Bedford
 1848 MONCRIEFF, Right Hon. Lord, of Tulliebole, Lord Justice-Clerk, 15 Great Stuart Street, Edinburgh
 1885 MONCRIEFF, Hon. James W., W.S., 6 Ainalie Place, Edinburgh
 1862 Moncrieff, Col. Alexander, of Barnhill,

Admitted

- C.B., F.R.S., 15 Vicarage Gate, Kensington, London, W.
 1866 Moncrieff, David Scott, W.S., 24 George Square, Edinburgh
 1878 Monilaws, Rev. James John, Middlebie Manse, Ecclefechan
 1833 Monro, A. B., of Auchanbowie, Stirling
 1851 Monro, David, of Allan, Tain
 1861 MONTAGU OF BEAULIEU, Lord, Palace House, Beaulieu, Southampton
 1846 Monteith, R., Tower Mains, Liberton
 1852 Montgomerie, Robert, Leassnuck, Ochiltree, Ayrshire
 1878 Montgomery, And., of Netherhall, Castle-Douglas
 1843 MONTGOMERY, Sir G. Graham, of Stanhope, Bart., Stobo Castle, Stobo—*Honorary Secretary of the Society*
 1882 Montgomery, Henry James, of Hattoburn, Minnathort
 1879 Montgomery, John, Comstonend, Twynholm
 1846 Montgomery, John B. H., of Newton, Stobo Castle, Stobo
 1878 Montgomery, William, Banks, Kirkcudbright
 1876 MONTROSE, His Grace, the Duke of, K.T., Buchanan Castle, Drymen
 1885 Moore, George, Longhirst, Morpeth
 1839 Moore, John C., of Cursewall, Stranraer
 1836 Moos, N. A. F., Poona, Bombay—*Free Life Member*
 1852 MORAY, Chas. Stirling Home Drummond, of Blair-Drummond, Abercainry, Crieff
 1869 Moray, Lieut.-Col. H. D., yr. of Blair-Drummond, Stirling
 1876 More, John, Fordhead, Kippen, Stirling
 1868 Morgan, David, South Mains of Ethle, Arbroath
 1882 Morgan, James, East Gogar, Blairlogie
 1873 Morrison, Bethune George Walker, of Falfield, Cupar-Fife
 1861 Morrison, James, Topeka, Kansas
 1850 Morrison, James G., Glasgow
 1862 Morrison, J. B. B., of Finnerlie, Kinross
 1886 Morrison, Major F. D., of Mountblairy, Turriff
 1855 Morrison, James O., yr. of Culvie, Aberchirder
 1883 Morrison, John, Carse of Trowan, Crieff
 1882 Morris-Stirling, J. M., yr. of Blackgrange, Gogar House, Stirling
 1886 Morris, Christopher, of Barons Craig, Dalbeattie
 1871 Morris, William, V.S., 7 Langtane Place, Aberdeen
 1883 Morrison, Alex., Nurseryman, Elgin
 1855 Morrison, Andrew, Upper Cotburn, Turriff
 1855 Morrison, Charles, of Islay, Bridgend, Islay
 1858 Morrison, Harry L. L., Don Bank Cottage, Aberdeen
 1873 Morrison, James M., Banker, Stirling
 1876 Morrison, John, junior, Hattonslap Methlick
 1859 Morrison, John, West Dalmeny, Dalmeny
 1885 Morrison, John, Knockiemill, Turriff
 1872 Mortimer, Thomas A., 86 George Street, Edinburgh
 1886 MORTON, Right Hon., The Earl of, Dalmahoy, Wilkeston
 1880 Morton, David (Graham & Morton), Stirling

Admitted

- 1861 Morton, J, Lambetham, St Andrews
 1881 Morton, James S, 6 St Andrew Square, Edinburgh
 1875 Morton, John, Nether Abington, Abington
 1879 Morton, R G, Engineer Errol
 1884 Morton, Thomas, Redhough, Gorebridge
 1859 Mosman, H, of Auchtyfardie, Lesmahagow
 1852 Moubray, John James, of Naemoor, Dolly
 1848 Moubray, John M late of Hartwood
 1876 Moubray, John M, Broom Court, Alcester Warwickshire
 1880 Moulst John 41 Mosley Street, Newcastle on Tyne
 1805 Mounsey, J T, of Kingfield, Longtown, Cumberland
 1877 Mounsey, William R, Lowther, Newton, Penrith
 1867 Muckart, James, Berriedale, Dunbeth, Caithness
 1879 Muckersie, Henry, Drumfin, Dunfermline
 1852 Muir G W, Kirkhouse Traquair, Inverlathen
 1878 Muir, James, Lochfeigus, Kirkcudbright
 1850 Muir John, Dryhope Yarrow, Selkirk
 1843 Muir John late of Gartferrie
 1862 Muir John Gardiner, late Anderston Foundry Co, Glasgow
 1882 Muir, Matthew Andrew, late Anderston Foundry Co Glasgow
 1877 Muir, William Lochdoun, Castle Douglas
 1862 Muirhead, E W, The Hill, Putney Surrey
 1872 Muirhead, F, Cloona Castle, Ballinrobe
 1863 Muirhead, George (late Durdie, Errol), London
 1872 Muirhead, Geo, Paxton, Berwick on Tweed
 1875 Muirhead, Thomas, Townhill Store, Dunfermline
 1874 Muirhead, Wm, Winton Place, Uddingston
 1873 Muirhead, William, Pirnhall, Bannockburn
 1886 Mukerji, Nitya Gopal, Bhowanipour, Calcutta—Free Life Member
 1878 Munby, Edward Chas, Myton Grange Helperby, Yorkshire—Free Life Member
 1876 Mundell, James P, Auction Mart, Perth
 1874 Mundell, John, Gorthluch, Foyers, Inverness
 1876 Mundell, Walter, Gollanfield, Fort George Station
 1861 Mundell, Walter Moy, Muir of Ord
 1870 Mundell, Walter Greive Inverlael, Lochbroom, Dingwall
 1883 Mungle John, West Calder
 1887 Mungle, John T West Calder
 1864 Munro, A, Ballinhard, Invergordon
 1888 Munro, Chas, Union Bank, Aberfeldy
 1864 Munro, D, Milton, Fort George Station
 1877 Munro, Duncan H Campbell, of Kenlochlauch, Appin, Argyll
 1883 Munro, Hector, yr of Fouha, Ardullie Lodge, Dingwall
 1858 Munro, John, of Springfield, Cupar Fife
 1877 Munro, John, of Lemlan, Dingwall
 1886 Munro, John C, yr of Marchbank, Balerno
 1874 Munro, John, Seedaman Inverness

Admitted

- 1880 Munro, William, of Marchbank, Balaeno
 1879 Murdoch, Mis, East Haughead, Uddington
 1875 Murdoch, Alexander, Gartnang, Shettleston
 1875 Murdoch George Bunn 2 Greenhill Bank, Wonningside, Edinburgh—Free Life Member
 1875 Murdoch, James, Dymie Muns, Inverness
 1874 Murdoch, James F, East Hallside, Newton, Lanarkshire
 1853 Murdoch, John Buin of Gartnacaber, Blurdummond Stirling
 1875 Murdoch, John Cantyne Shettleston
 1867 Murdoch, Robert, Hallside, Cambuslang
 1876 Murdoch William Solicitor, Huntly
 1847 MUIR Hon Lord, 12 Annals Place, Edinburgh
 1870 Muir William J Advocate, 39 Henriot Row, Edinburgh
 1876 Murray Allan Castlehill Mill Lockcathie
 1879 Murray, Alex, Brewery Park, Haddington
 1881 Murray, Captain A B, Gartur Stirling
 1850 Murray Anthony George, of Dolerie, Chief
 1877 Murray, A Graham Advocate, 7 St Colme Street, Edinburgh
 1879 Murray Benjamin Esq, of Parton, Castle Douglas
 1880 Murray Lt Col Chas Stewart, Auchme, Stirling
 1884 Murray, Chas, of Lochcarron, Dingwall
 1871 Murray, C A Trymount, Stanley
 1864 Murray, D Grunard Poolewe
 1879 Murray, David, Dumfriesshire
 1863 Murray, David Mome Park, Cardross
 1854 Murray George (late Mount Pleasant, Berwick) New Zealand
 1865 Murray, G R, Princes Street, Stranraer
 1867 Murray, G, Elvinston Castle, Derby
 1879 Murray, Geo Rugby, yr of Parton, Castle Douglas
 1869 Murray, G W, Bruff Foundry, Banff
 1857 Murray, James, Dumfries Arms Hotel, Dumfries
 1873 Murray, James, Gartur, Stirling
 1861 Murray, James, Catter House Drymen
 1879 Murray, James, Fuchfaulds, Turiff
 1869 Murray, James Wolfe, of Cringletie, Peebles
 1862 Murray, John I, of Herrysside, Bigger
 1863 Murray, Lieut Col John, of Polmarie, Stirling
 1873 Murray, John, Munnieston, Thornhill, Stirling
 1884 Murray, John, Parkhill Douglas
 1863 Murray, John, of Woolpaw, Galashells
 1865 Murray, J J, Factor, Iasque, Fettercarron
 1878 Murray, Patrick Strabane, Brodick
 1862 MURRAY, Sir Patrick Keith, of Ochertyre, Birt, Chief
 1850 Murray, Robert, 54 Grove Street, Edinburgh
 1868 Murray, R, 7 Roxburgh Place, Edinburgh
 1874 Murray, Robert G, of Spittal, Biggar
 1875 Murray, Robert W E, 18 Seton Place, Edinburgh—Free Life Member
 1857 Murray, Thomas, Braidwood, Penicuik
 1852 Murray, Thomas G., Stanton, Dundee

Admitted

- 1857 Murray, William, Kilcoy, Killearnan, Inverness
 1858 Murray, Wm., Mains of Pittendreich, Turrit
 1888 Murray, William, Bellfield, Inverness
 1870 Murray, W. G. G., Bulfracks, Aberfeldy
 1884 Murray, William J., Mailingsland, Peebles
 1855 Murray, Wm. H., W.S., 48 Castle Street, Edinburgh
 1876 Mutch, Alexander, Mains of Newhall, Stonehaven
 1875 Mutter, John, 29 Chalmers Street, Edinburgh
 1861 Myles, James, Deanside, Renfrew
 1883 Nairn, Michael B., of Rankellour, Cupar-Fife
 1879 Nairne, Thomas Graham, Dunsinnan, Perth
 1874 Nairne, William, of Dunsinnan, Perth
 1843 NAPIER and ETRICK, Right Hon. Lord, K.T., Thirlstone Castle, Selkirk
 1875 Napier, John S., of Lethame, Strathaven
 1857 Napier, Dugald (late Port Dundas), Australia
 1872 Nares, A. F., Bructor, Old Meldrum
 1870 Neilson, Joseph, Killimungan, Kirkcubright, Dumfries
 1867 Neilson, William, Estate Factor and Banker, Bank of Scotland, Bellshill
 1871 Nelson, Charles, Skateraw, Inverness
 1845 NEPEAN, Sir M. H., of Loders Court, Bart., Bridport
 1856 Newbigging, Thomas Kennedy, Nurseryman, Dumfries
 1865 Newton, Captain Hay, of Newton, Hadington
 1872 Newton, T. H. G., Barrels Park, Henley-in-Arden, Birmingham
 1878 Nicholson, William Newzan, Trent Iron Works, Newark
 1882 Nickels, John Tetley, Montford, Montford Bridge
 1883 Nicol, James, Solicitor and Banker, Oban
 1885 Nicol, William, Ordhead, Cluny, Aberdeen
 1849 Nicol, W. E., of Ballogie, Aboyne
 1844 Nicoll, Alexander, late of Edinburgh
 1867 Nicoll, T. Munro, Littleton, Kirriemuir
 1884 Nicoll, Wm., Hilton of Fearn, Brechin
 1857 Nicolson, James Badenach, of Glenbervie, Forthoun
 1878 Nimmo, Alexander, of West Bank, Falkirk
 1852 Nimmo, Matt., Foot O'Green, Stirling
 1887 Nimmo, Thomas, Lawhead, Forth, Carstairs Junction
 1880 Nisbet, George, Rumbleton, Greenlaw; Berwickshire
 1870 Nisbet, Jas., of Lambden, Greenlaw, Berwickshire
 1875 Nisbet, John, Longgreen, Newmilns, Kilmarnock
 1865 Nisbet, Ralph P., 4 Dempster Terrace, St Andrews
 184 Nisbet, T. M., Forthar, Kettle, Fife
 1847 Nisbett, J. M., of Cairnhill, Drum, Edinburgh
 1880 Niven, Alexander T., C.A., 123 George Street, Edinburgh
 1884 Niven, Richard, Dalmottar, Old Kilpatrick
 1873 Nivison, Stewart, Lairdlaugh, Dalbeattie
 1878 Nixon, R. L., Bonstead Hill, Burgh-by-Sands, Carlisle.

Admitted

- 1878 Nonnen, John Edward, Norway—Free Life Member
 1860 Norman, Wm., Hall Bank, Aspatia—Free Life Member, 1873
 1880 Normand, Wm. J., Dysart
 1862 Norie, Henry Hay, W.S., 63 George Street, Edinburgh
 1883 Norrie, Wm., Cairnhill, Monquhitter, Turrit—Free Life Member
 1867 Norris, Peter, Todholes, Fintry, Stirling
 1879 North, G. F., Wroston Estate Office, Banbury
 1873 Ogilvie, A. M., Tillynaught, Portsoy
 1885 Ogilvie, David, Firhills, Arbroath
 1838 Ogilvie, William R., Skelton, Penrith
 1860 Ogilvie, George, Holefield, Kelso
 1870 Ogilvy, Col. James W., Rannagulzion, Blairgowrie
 1824 OGILVY, Sir John, of Inverquhar, Bart., Baldoon House, Dundee
 1886 Ogilvy, John, of Inshewan, Kirriemuir
 1859 Ogilvy, John, Harecraig, Dundee
 1874 Ogilvy, John Francis, 21 The Grove, Boltons, South Kensington, London
 1871 Ogilvy, Colonel Reginald Howard Alexander, yr. of Inverquhar, Millhill, Inchture
 1844 Omlvy, Lieut.-Col. Thomas W., of Ruthven, Meigle
 1882 Ogston, Alex. Milne, of Ardoe, Aberdeen
 1872 Oliphant, L. J., of Condie, Guards Club, London
 1873 Oliphant, Thomas T., of Rossie, Queen Mary's, St Andrews
 1886 Oliver, Andrew R., Thornwood, Hawick
 1852 Oliver, James, of Thornwood, Hawick
 1883 Oliver, James, Benluy, Inveraray
 1880 Oliver, John, Borthaugh, Hawick
 1853 Oliver, Robert, of Blakelaw, Lochside, Kelso
 1853 Oliver, W. Elliot, Benhuy, Inveraray
 1873 Oliver, Wm. M., Howpasley, Hawick
 1875 Ord, John Robert, Haughton Hall, Darlington
 1887 Orde, Arthur, John Campbell yr. of Kilmory, Lochgilphead
 1858 ORDE, Sir John W. Powlett Campbell, of Kilmory, Bart., Lochgilphead
 1873 Orr, James, Hill, Whitburn
 1875 Orr, James, of Harrieston, Dollar
 1887 Orr, William, 45 West Nile Street, Glasgow
 1882 Oshorne, David, Banker, Cupar-Fife
 1884 Oslar, Andrew, Kintyre, Kirriemuir
 1848 Oswald, James Townsend, of Dunnikier, Kirkcaldy
 1870 Oswald, Richard A., of Auchencruive, Ayr
 1878 Owens, Walter, Torr House, Castle-Douglas
 1876 Owens, William R. (Thomas Owens & Sons), Leith
 1886 Page, Walter, Bodelays, Kirkcaldy
 1871 Pantou, John, of Dalnagairn and Carsie, Blairgowrie
 1873 Pantou, William, Maryfield, Blairgowrie
 1881 Park, Alexander, Factor, Gartshore, Croy, Glasgow
 1874 Park, Ebenezer, Engineer, Greenside Lane, Edinburgh
 1863 Park, James, Stoneyhill, Musselburgh
 1881 Park, James, Dechmont, Cambuslang
 1873 Park, James D., Engineer, Greenside

Admitted

- Lane, Edinburgh—*Practical Engineer to the Society*
 1806 Park, Thomas B., Springfield, Haddington
 1881 Park, Walter, Hutton, Dianopton
 1874 Park, William, Brunstane, Portobello
 1877 Pate, Andrew, Easter Middleton, Gorebridge
 1807 Paterson, Charles, Canford Manor, Wimborne
 1804 Paterson, D. A., Merchant, Leith
 1870 Paterson, David J., Watch Hall, Annan
 1888 Paterson, Donald, Askernish, Lochmaddy
 1877 Paterson, George, Fallhills, Penicuik
 1883 Paterson, George Frederick, of Castle Huntly, Longiorran
 1877 Paterson, G. E., Drumalbin, Thankerton
 1888 Paterson, James, Culaird, Inverness
 1873 Paterson, Jas., Kildisielhangh, Duns
 1883 Paterson, James, 32 Eldon Street, Greenock
 1800 Paterson, Jas., of Carmacoup, Douglas
 1878 Paterson, James, of Bankton, Mid-Calder
 1884 Paterson, James, jun., Over Abington, Abington
 1886 Paterson, James, of Whitelee, Stow
 1882 Paterson, John, Kirkton, Tyndrum
 1847 Paterson, John, jun., 2 Avenue Villa, Woburn Road, Bedford
 1857 Paterson, John, Skirling Mains, Biggar
 1802 Paterson, John, Howelouch, Moffat
 1883 Paterson, John, South Slipperfield, West Linton
 1873 Paterson, John Thomas Scott, Plean Farm, Bannockburn
 1877 Paterson, John, Meadowspott, Dalkeith
 1877 Paterson, John, Colfin, Stranraer
 1881 Paterson, J. Jardine, of Balgray, Lock-erlie
 1854 Paterson, J. W. J., Terrona, Langholm
 1886 Paterson, John S., Craigdarroch, Sanquhar
 1877 Paterson, Richard L., Langside, Dalkeith
 1878 Paterson, Robert B., V.S., Irving Street, Dumfries
 1848 Paterson, Robert, of Birthwood, Biggar
 1883 Paterson, Robert, Hill of Drip, Stirling
 1884 Paterson, Robert, of Robgill Tower, Ecclefechan
 1860 Paterson, Thomas, W.S., 81A George Street, Edinburgh
 1851 Paterson, Walter, Mount Blow, Dal-muir
 1870 Paterson, Wm., of Brocklehurst, Mous-wald, Ruthwell
 1884 Paterson, William, Grange, Pettinain, Thankerton
 1886 Paterson, William, Rock Hall, Dumfries
 1884 Paterson, Wm. B., Windyknowe, Gala-shiels
 1874 Paterson, William Grindlay, Ord, Inver-gordon
 1806 Paterson, Wm. Innes, Armadale, Thurso
 1873 Paterson, Wm., Ankutown of Carnousie, Turrit
 1885 Paterson, William, Craigdarroch, San-quhar
 1857 Paton, Alexander, Norwood, Sydenham, London
 1880 Paton, James, jun., Obney, Bankfoot, Perth
 1885 Paton, James, Glencaple, Abington
 1878 Paton, John, of Viewforth, Stirling
 1868 Paton, John, Kirkness, Lochgelly
 1888 Paton, John, of Cralling, Kelso

Admitted

- 1873 Paton, Robert, West Drip, Stirling
 1805 Patrick, James, late of Kilmun, Argyll-shire
 1873 Patrick, James, Queensieburn, Kilsyth
 1882 Patten, James, Advocate, 16 Lynedoch Place, Edinburgh
 1870 Patterson, Alex., Henhill, Forteviot
 1850 Patterson, John, 23 Queen Street, Stirling
 1851 Patterson, Robt., 42 Queen Street, Stirling
 1872 Pattison, J. P., of The Haining, Selkirk
 1885 Pattullo, James (of Ashmore), Abertay, Broughty Ferry
 1885 Pattullo, William, 18 St Andrew Street, Dundee
 1890 Paul, George M., C.S., 10 St Andrew Square, Edinburgh
 1855 Paul, William, Advocate, Aberdeen
 1882 Paul, James, Advocate, Aberdeen
 1884 Paxton, Alex., Broomknowe, Brechin
 1878 Payne, James, 28 Buccleuch Street, Dumfries
 1884 Pearson, Alex. G., Johnston Lodge, Laurencekirk
 1854 Pearson, Andrew A., of Springfield, Carlisle
 1803 Pearson, David A., Johnston Lodge, Laurencekirk
 1858 Pcat, John, Manor, Stirling
 1850 Peddie, Wm., 11 South Methven Street, Perth
 1807 Pella, H. R. B., Mansion House, Greenock
 1804 Pelham, C. Thursby, Cound Rectory, Shrewsbury
 1809 Pender, J., Springhill, Stone, Shotts
 1860 Pender, John, 68 Old Broad Street, London, E.C.
 1878 Pendreigh, George, Catcune, Gorebridge
 1854 Peter, John, Croyard, Beaulieu
 1875 Peterkin, Jas. Grant, of Grange, Forres
 1879 Peterkin, William, Dunglass, Conon Bridge
 1884 Petrie, David D., Royal Hotel, Arbroath
 1871 Petrie, George, Rosehaugh, Elgin
 1883 Petrie, George, Pitairlie, Elgin
 1803 Petrie, James, Banker, Dufftown
 1871 Petrie S. F., 350 Leith Walk, Edinburgh
 1870 Petrie, William, Kirkhill, Elgin
 1876 Petrie, W. A., Rosebrae, Elgin
 1875 Pettigrew, James, Cliftonhill House, Coatbridge
 1885 Philip, Forbes, Tullos Farm, Nigg, Aberdeen
 1886 Philip, George, Boynds, Keith Hall, Inverurie
 1888 Philip, W., Loffthillock, Keith Hall, Inverurie
 1870 Philip, David, S.S.C., 41 Charlotte Square, Edinburgh
 1882 Phillips, Thomas, Carse, Kirkcudbright
 1884 Philp, Alex., Chapelhill, Logiealmond
 1864 Philp, Robert, Royal Hotel, Bridge of Allan
 1857 Picken, James, Laigh Langside, Craigie, Kilmarnock
 1800 Picken, R., Barnkirk, Newton-Stewart
 1884 Pirie, A. G., of Lecknaim, Ullapool
 1871 Pirie, James P., Coachbuilder, Perth
 1873 Pitblado, Charles E., Charlestown, Dumfries
 1884 Pitcairn, D. D., Kinnaird, Newburgh
 1878 Pitcairn, Henry H., of Tioran, Mull
 1863 Pitcairn, John, 9 Abbotstford Crescent, St Andrews
 1884 Pitcairn, R. A., Lower House, Thursley, Godalming
 1860 Pitman, Frederick, W.S., 11 Great Stuart Street, Edinburgh

Admitted

- 1859 Pittendrigh, A., Mains of Park, Lom-
may
1859 Plenderleith, A., Moorfoot, Gore-
bridge
1885 Plummer, Chas. E. Scott., of Sunderland
Hall, Selkirk
1860 Plummer, J., 11 Bruntsfield Place, Edin-
burgh
1881 Pollock, A., Agricultural Engineer,
Manchline
1881 Pollock, George, Seedsman, Stirling
1881 Pollock, J. J., of Auchineden, Strath-
blane
1882 Pollock, John, Greenlaw, Mearns, Ben-
treshire
1885 Pollock, Thos., Widmerpool, Notting-
ham
1884 Pollock, Walter, Yoker Mains, Glasgow
1870 Pollok, John, of Ronachan, Clachan,
Greenock
1873 Pollok, John, of Blackhouse, Mearns
1863†POLWAI TH, Right Hon. Lord, Mertoun
House, St Boswells
1877 Pople, George, Newhouse, Perth
1867 Pople, H. W., Royal British Hotel,
Perth
1861 Pople, J. B., of Newhouse, Perth
1878 Porteous, David Scott, of Lauriston,
Montrose
1880 Porteous, James, Solicitor, Coldstream
1877 Porter, George, jun., 28 Market Street,
Aberdeen
1881†PORTLAND, His Grace the Duke of,
Langwell, Wick
1880 Pott, George, of Potburn, 55 Albany
Street, Edinburgh
1854 Pott, Gideon, of Dod, Knowesouth,
Jedburgh
1867 Potter, James, of Glenfuir, Falkirk
1883 Pottle, Alex. V.S., Paisley
1863 Potts, Andrew, Beechwood, Selkirk
1861 Powrie, Archibald, Lairwell, Perth
1849 Powrie, James, of Reswallie, Forfar
1864 Prentice, George, of Strathore, Thornton
1885 Prentice, Manning, Chemical Works,
Stowmarket
1865 Prentice, R. R., Cameron Bridge House,
Windygates
1875 Preston, W. C., Achonachie Lodge,
Muir of Ork
1880 Primrose, Alfred G., Dock Street, Dun-
dee
1863 Primrose, James Thomson, late Sauch-
land, Ford
1884 Primrose, John, Solicitor, Dumfries
1875 Pringle, Adam T., India Buildings,
Kelso
1859 Pringle, Alexander, of Whytbank, Sel-
kirk
1863 Pringle, David, of Wilton Lodge,
Hawick
1863 Pringle, David, Torquhan, Stow
1876 Pringle, James, 5 Tipperlinn Road,
Edinburgh
1863 Pringle, James Thomas, of Torwoodlee,
Galaahills
1865 Pringle, John, Garvald, Gorebridge
1884 Pringle, John, Castlemains, Douglas
1862 Pringle, Robert K., Shorncliffe, Chelten-
ham
1877 Pringle, William, Huntly Cot, Gore-
bridge
1868 Proffitt, Dr., Craigavon Cottage, Bal-
moral, Ballater
1868 Proudfoot, T., Pinkiehill, Musselburgh
1877 Pudney, R. L., Earl's Colne, Halstead,
Essex—Free Life Member
1871 Pullar, Robert, of Tayside, Perth
1865 Puntton, F. H., Aberlady Mains, Long-
niddry

Admitted

- 1861 Purves, James, Barro, III Mains, Wick
1871 Purves, Thomas, Rhifail, Bettyhill,
Thurso
1869 Purves, William, Thurlistoft, Thurso
1844 Purvis, John, of Kinaldy, St Andrews
1867 Pyhlson, Karl Gregor Arthur, Camphill,
Berwick-on-Tweed
1869 QUEENSBERY, Most Noble the Marquis
of, Kinnmount, Annan
1883 Quibell, W. O., Highfield House, New-
ark-on-Trent
1882 Rae, John, jun., Corn Merchant, Elton
1872 Rae, Robert, Burnbank, Foulden,
Berwick-on-Tweed
1882 Rae, William, Advocate, Aberdeen
1860 Rae, William, Gateslack, Thornhill
1883 Rae, William, jun., Gateslack, Thorn-
hill
1884 Rae, W. A., Durnis, Aberdeen
1884 Bain, Rev. Thos., Hutton Manse, Lock-
erbie
1870 Rain, Wm., Kempleton, Tynholm
1867 Rames, Thomas, Bridgehaugh, Stir-
ling
1879 Rait, James, Culcraiff, Crieff
1870 Ralston, A. B., late straiton, May-
bole
1878 Ralston, Andrew, Glamis House, Glamis
1867 Ralston, Andrew W. (late Lagg, Ayr),
America
1871 Ralston, James J., Warwick Hill
House, Kilmarnock
1877 Ralston, John, Milmain, Stranraer
1883 Ralston, Robert, Milmain, Stranraer
1883 Ralston, William H., Culmore, Stran-
raer
1860 Ramsay, Alexander, Banffshire Journal
Office, Banff
1871 RAMSAY, Sir James Henry, of Banff,
Baird, Aylth
1856 Ramsay, John, of Kildalton, Port Ellen,
Islay
1875 Ramsay, John, Butcher, Kilbarchan
1856 Ramsay, Col. John, of Barra, Straloch,
Aberdeen
1881 Ramsay, R. G. Wardlaw, of Whitehill,
Rosewell
1837 Ranken, George (late Drumley, Ayr-
shire), Australia
1874 Ranken, John S., Laweaknowe, Moffat
1884 Rankin, P. L., Oban
1875 Rankin, Alex., Aird, Stranraer
1883 Rankin, Robert, Auctioneer, Inchterf,
Kirkintilloch
1876 Rankine, Alex. M., Lochlands, May-
bole
1874 Rankine, John, of Bassendean, 10 Mel-
ville Street, Edinburgh
1868 Rankine, R. W., Rosebank, Falkirk
1886 Rannie, D. W., of Combeath, Dum-
fries
1859 Rannie, M. G., 6 Parkview Terrace,
Smith Street, Hillhead, Glasgow
1878 Ransome, James Edward (Ransomes,
Sims, and Head), Ipswich
1868 Rate, George (late Mungoswells, Drem),
America
1864 Ratray, Lieut.-General J. C., of Craig-
hall, C.B., Blairgowrie
1874 Ratray, James Clark, M.D., of Coral
Bank, Blairgowrie
1882 Ratray, Patrick, C.A., Gresham House,
Glasgow
1856 Rawdin, Joseph, Chemist, Jedburgh
1870 Rawline, J. D., Rose Farm, Formby,
Liverpool
1863 Rea, Charles, Doddington, Wooler
1884 Readdie, John, of Cuthill, Kinross

Admitted

- 1871 REAY, Right Hon Lord, Crookston, Earlston
 1874 Reddie, Captain John Griffiths, of Red house, Ricknton House, Stonehaven
 1877 Redfern, W. Macquarrie Conservative Club, St James Street, London
 1884 Reekie, A., Walton, Auchtertool, Kirkcaldy
 1873 Reekie, W., Carterhaugh, Selkirk
 1873 Reid, Alexander, Architect Elgin
 1884 Reid, Alfred, Breibuster Kirkwall
 1880 Reid, Andrew, Haming Valley, Lunithgow
 1886 Reid, Andrew, V 9, Auchtermuchty
 1844 Reid, Charles G. W 9
 1807 Reid, F R., of Gallowflat, Rutherglen
 1879 Reid, Frank R., jun., Gallowflat, Rutherglen
 1874 Reid, George Bards of Drum, Peterculter, Aberdeen
 1876 Reid, George, jun., Clinterty, Blackburn, Aberdeen
 1871 Reid, George, of Tillyrie Milnforth
 1880 Reid, G A., 333 Leith Walk, Edinburgh
 1877 Reid, Dr James, Templeton, Mossat
 1857 Reid, J., Corsebank, Cupar
 1858 Reid, James Wideside Cottage, Alford
 1876 Reid, James, House Bizzan, Peterhead
 1873 Reid, James, Kilmarnock, Glasgow
 1849 Reid, James, Ittington, Huntly
 1853 Reid, John of Dunduff, Dumfries
 1854 Reid, John, Bligham Alford, N B
 1870 Reid, John James, Advocate, 15 Belgrave Place Edinburgh
 1884 Reid, Norman, New Kelso, Strathcarron
 1882 Reid, Peter, Port Ellen, Islay—*Free Life Member*
 1882 Reid, Robert, Writer, Lochwinnoch
 1883 Reid, R C., C.E., 72 George Street, Edinburgh
 1864 Reid, Walter, Cragarnhall, Bridge of Allan
 1885 Reid, William, 8 Hadden Street, Aberdeen
 1885 Reid, William, 140 St Vincent Street, Glasgow
 1887 Reid, William M D Pittenturn, Cress
 1884 Reid, Wm R., Solicitor, 137 Union Street Aberdeen
 1884 Reid, Wm T., of Ardmellie, Banffshire
 1878 Reith, Robert, Middlesfield, Woodside, Aberdeen
 1882 Rennie, David, 72 W'Alpine Street, Glasgow
 1878 Rennie, James, Brewer Dumfries
 1883 Rennie, James, Corrie, Llangath
 1877 Rennie, John, Egmont Farm, Newark, Notts
 1884 Renwick, George J., Corsbie, Earlston
 1872 Renwick, John, Nurseryman Melrose
 1883 Renwick, Robert, Dalnair Farm, Dalnair
 1879 Renwick, William, Meadowfield, Corstorphine
 1885 Rew, William 4 Bernard Street, Leith
 1884 Richard, J V., of Clarendon, 20 Grosvenor Crescent, Edinburgh
 1873 Richardson, Alex., late Castleton, Gorebridge
 1863 Richardson, D., of Hartfield, Church Place, Greenock
 1874 Richardson, George, Linwood, Paisley
 1861 RICHARDSON, Sir James T Stewart, of Pitfour, Birt, Perth
 1873 Richardson, John 59 Warrender Park Road, Edinburgh

Admitted

- 1884 Richardson, John, Braehead, Heck, Lockerslie
 1863 Richardson, J., Southfield, Haddington
 1878 Richardson, Ralph, W S, 10 Magdala Place, Edinburgh
 1878 Richardson, Robert A., Sarkfoot, Greta
 1878 Richardson, William, 11oshend, Greta
 1884 Richardson, Wm., Colind, Dumfries
 1840 RICHMOND and GORDON, His Grace the Duke of, K G, Gordon Castle, Fochabers
 1861 Richmond, G., late of Bulhaldie, Braeco
 1861 Richmond, John Dion, Bridge of Larn
 1871 Richmond, J., Bilton, Perth
 1831 Richman, Thomas, late Architect, Birmingham
 1877 Riddell, A., 1 Victoria Street, Edinburgh
 1863 Riddell, David, Blackhall, Paisley
 1880 Riddell, John, Rank, Gushuels
 1884 Riddell, Thomas, Muckle Prastounkirk
 182 Riddell, William, Humdlee Jedburgh
 1862 Riddell, William, Cocklaw, Haddington
 1880 Riddle Andrew, Yverring, Wooler
 1878 Rie, James Home, of Luvi, Cupar
 1861 Rie, Wm., Banks, Kirkcudbright
 1852 Rintoul, Charles, Levenhall, Musselburgh
 1861 Rintoul, D., Mains of Blebo Cupar Fife
 1883 Risk, James, Dumfries Bridge of Allan
 1866 Ritchie, Charles, S S C, 20 Hill Street, Edinburgh
 1865 Ritchie, Charles, late Ladoga Lodge, Musselburgh
 1877 Ritchie, David (of Kilmur), 13 Windsor Street, Edinburgh
 1885 Ritchie, David, 39 Market Street, Aberdeen
 1881 Ritchie, G Deans, Cloverhill, Biggar
 1857 Ritchie, John, Newbigging Mains, Canawath
 1867 Ritchie, John, Whitecastle, Biggar
 1878 Ritchie, John, 184 Morrison Street, Edinburgh
 1872 Ritchie, Robert, Cloverhill, Biggar
 1879 Ritchie, Robert B., Accountant, Dundee
 1863 Ritchie W., Woolmet, Dalkeith
 1862 Ritchie, Wm., West Plan, Stirling
 1865 Ritchie, W., of Middleton, Gushbridge
 1884 Ritchie, William, jun., Lyne Stobo
 1882 Robb, George, 11 Gilmiston Street, Glasgow
 1863 Robertson John, Falside, Stithil, Kelso
 1863 Robertson, Robert, Ladyrig, Kelso
 1873 Roberts, James, Greenhead of Arnot, Leslie, Fife
 1883 Roberts, Wm., Dell of Inches, Inverness
 1883 Roberts, William, Kingussie
 1871 Robertson, Mrs, sen., of Struan, Rannoch
 1881 Robertson, Alexander, Forester, Shaw Park, Alloa
 1876 Robertson, Alex., Tocherford, Rayne, Warthill, Aberdeen
 1879 Robertson, Alex., Ballechin, Ballinlurg
 1869 Robertson, Rev A Irvine, Clackmannan
 1880 Robertson, Dr Charles, Auchtercairn, Garrioch
 1889 Robertson, C., of Kindesside, Invergordon
 1886 Robertson, C T A., Kensworth Lodge, Polwarth Terrace, Edinburgh
 1861 Robertson, David, Allan Hill House, Dunblane
 1847 Robertson, David Souter, of Whitehill, Cookston Park, Brechin
 1879 Robertson, Donald, Blackhill, Ballinlurg
 1882 Robertson, Donald, of Mayfield, Cupar-Fife

Admitted

- 1876 Robertson, Duncan, of Pennyghael, 73 Great King Street, Edinburgh
 1804 Robertson, D G, of Torrie, Calander
 1880 Robertson, Edgar W, of Auchleeks, Blair Athole
 1876 Robertson, George, of Hedderwick, C E, Athenaeum Club Pall Mall London
 1836 Robertson, James 27 Albert Place Strling
 1881 Robertson, James, Blackhaugh, Dunkeld
 1882 Robertson, James, Forester, Panmure, Carnoustie
 1889 Robertson, J, Denbire, Cupar Fife
 1884 Robertson J A, C A, 30 Charlotte Square, Edinburgh
 1870 Robertson James A (late Chapel Park, Kinrossie) Virginia C S
 1876 Robertson (late Colonel) J Carmichael, of Whitefield Govin
 1873 Robertson James F Newhouse Drem
 1882 Robertson, James J, Kinloch Moiven, Olcan
 1851 Robertson James Stewart, of Edrady nite Lallinling
 1876 Robertson James Stewart of Edrady nite Colquhaine Auchterarder
 1876 Robertson John, Auchinchie, Pitlochry
 1874 Robertson, John, of Grahams, Portree
 1875 Robertson, John, Mount Abundance Queensland
 1870 Robertson, John, West Mitchellton, Lochwinnoch
 1878 Robertson John, of Golden Grove, Adelaide, South Australia
 1884 Robertson, John, Craig Farm, Dilmilly
 1864 Robertson, J, Old Blair, Blair Athole
 1874 Robertson John, Fern
 1886 Robertson, John, late 66 Ruth Street, Glasgow
 1873 Robertson, John S, Springkell, Ecclefechan
 1872 Robertson, Peter, Achilty, Dingwall
 1870 Robertson Peter D late 9 King Street, Finsbury Square London
 1872 Robertson, Robert, West Barns, Dunbar
 1882 Robertson, Robert, Breakough, Millport, Isle of Cumbrae
 1884 Robertson, Robert, Implement Maker Wick
 1876 Robertson Robert Wm of Glenshullish Rockingham, Kilmeargin
 1861 Robertson, Stewart Souter yr of Whitehill, London and North Western Railway Co s Goods Office, Broad Street, London, E C
 1883 Robertson, Thomas, Highland Railway, Inverness
 1859 Robertson, W Y, Bedford Street, Port Hope, Canada
 1874 Robertson, Wm, Aberlour Muns, Craigellachie
 1857 Robertson, Wm, Port Gordon, Fochabers
 1868 Robertson, William, V S, Professor of Hippo-pathology, Royal Vet College, Camden Town, London
 1879 Robertson, Wm, jun, Two mile House, Murrayshall, Perth
 1879 Robertson, Wm, Engineer, Canal Street, Perth
 1870 Robertson, Wm A, Mayfield, Forres
 1883 Robertson, Wm, Potato Merchant, Perth
 1872 Robeson, George, late Brotherston, Kelso

Admitted

- 1882 Robinson, Archibald, M R C V S, Greenock
 1878 Robinson, Thos, Cargo, Carlisle
 1855 Robson, Alex (Wm Smith & Son), Seedsman, Aberdeen
 1886 Robson, Andrew, Architect, 101 St Vincent Street, Glasgow
 1863 Robson, Chas I 34 Hartington Road, Ealing London
 1884 Robson, Jacob, Byrness, Otterburn
 1874 Robson, John, Newton, Bellingham, Northumberland
 1884 Roddick Frank, Trailtrow, Ecclefechan
 1881 Rodger, George, Newton Bank, Preston Brook
 1884 Rodger, George, West Muns of Ethie, Arbroath
 1877 Rodger, Hugh Hillhead Kilmunoch
 1882 Roddie, Hugh, 10 Lark Street, Ardrie
 1879 Rodger, Peter, Selkirk
 1888 Rodger, L, Hadlow Castle Tunbridge
 1882 Rodger Robert, jun, Muns of Dun, Vintrose
 1873 Rodrie Henry Aithrie Levan
 1862 Rogers, James S, Rose Mill, Dundee
 1881 Rogers Wm, Ph D, Rose Mill, Dundee
 1887 Rolland Adam of Gask, 20 Athole Crescent, Edinburgh
 1882 Rollo James Rosemount Dunning
 1887 Rollo Right Hon Lord, Duncrub House, Dunning
 1883 Rollo, Hon the Master of, Duncrub Park, Dunning
 1868 Romnes Robert of Harriburn, Funder
 1873 Rome, Thomas (Chait n House, Charlton Kings, Cheltenham—Fru Life Member
 1885 Ronald, James, Pitbee Pitciple
 1879 Roscoe, Wm C, Broushall House, Whitchurch Shipc-hut
 1883 Rose, Campbell Helen 18 Varn
 1883 Rose, Hugh, Solicitor, Inverness
 1875 Rose, Rev Hugh Francis, of Holme Base Fort George Station
 1885 Rose James, Muns of Connage, Fort George Station
 1885 Rose, John Leinach Inverness
 1885 Rose Mary James, of Kilrivoek, Fort George Station
 1885 ROSEBERRY Right Hon the Earl of, Dalmeny Park Edinburgh
 1883 Ross, Alex, Architect Inverness
 1880 Ross, Alex, 60 Queen Street, Edinburgh
 1885 Ross Alex Nether Park Drumoak
 1884 Ross David, Banker, Dingwall
 1880 Ross, D A MacBean, 123 Bishopsgate Street, London, E C
 1884 Ross, D G, Merchant, Dingwall
 1874 Ross, Duncan, Hilton, Inverness
 1872 Ross, George, Merchant Dingwall
 1888 Ross, H jun, Union Bank of Scotland, Tairland
 1883 Ross, James, Solicitor, Inverness
 1876 Ross James Blair, Fdderton
 1870 Ross, James, M D, Linlithgow, Elgin
 1871 Ross James E, Factor, Abercairny, Crief
 1870 Ross, John, The Grove, Ravenglass, Carnforth
 1874 Ross, John, Meikle Tarnel, Fearn
 1883 Ross, John Leith, of Arnage, Ellon
 1884 Ross J M, East Pleas House Bannockburn
 1871 Ross, Peter, Arngrove, Torphons
 1880 Ross, Richard, Rutherford, Kelso

Admitted

- 1871 Ross, Wm, Annealey, Torphims
 1881 Ross, Wm, North Drumgray Forfar
 1888 Ross Wm, Seafeld of Rugmore, Inverness
 1857 Rosslyn, Right Hon the Earl of, Dysart House, Kirkcaldy
 1870 Roigh, Robert, Wellford, Broxburn
 1850 Roughed, D, 21 Grosvenor Street, Edinburgh
 1878 Routledge, Charles M, Bank Agent, Port William
 1878 Routledge, James J F, Oldmill, Port William
 1870 Routledge, Wm, Elma, Port William
 1857 Rowan, J M, late Atlas Works, Glasgow
 1881 Rowan, P F Connal, of Manlewood, Stirling
 1871 Roxburgh, Robt, Seed Merchant, Kinross
 1863 ROXBURGH, His Grace the Duke of, Floors Castle, Kelso
 1856 Roy, Alexander, Waterton, Inch, Aberdeen
 1871 Roy Fred Lewis of Nenthorn, Kelso
 1871 Roy, Thos, Craigclown, Perth
 1866 Royd, Robert Whyt, late Bulbaggie, Kirkcaldy
 1885 Runciman, Jas Cattleton King Edward
 1885 Runciman, John, Auchmull, King Edward
 1882 Russel, James, Dundas Castle, Queensferry
 1853 Russell Alex, Myreside, Elgin
 1886 Russell, Alex, of Mossdale, Bithgate
 1854 Russell Andrew Walker, of Kenlygreen, St Andrews
 1867 Russell, Arch, Kilbryde Castle, Dunblane
 1854 Russell, Arthur, Royal Bank, Cupar Fife
 1859 Russell, David, Silverburn, Leven
 1877 Russell, George, Carnwath
 1882 Russell, George, Hutton, Largo
 1882 Russell, James, Allanton, Hamilton
 1875 Russell, James, National Bank, Airdrie
 1869 Russell, James, of Kinleath, Parbroath, Cupar Fife
 1851 Russell, James M, late Greendylkes, Tranent
 1862 Russell, John, late Saughton Hall Mans Murrayfield
 1881 Russell, Thomas Purves, of Warroch, Milnathort
 1853 RUSSELL, Sir William, of Charlton, Birt
 1858 Rust, James, Paddocklaw, Banff
 1872 Rutherford, Andrew, Rumbleton Law, Gordon
 1860 Rutherford, G, Monteath's House, Gorebridge
 1863 Rutherford, G Printonan, Coldstream
 1863 Rutherford, William A. Oliver of Edgerton Jedburgh
 1884 Rutherford, Wm E Oliver, yr of Edgerton, Jedburgh
 1854 Ruxton, Andrew, South Artrochne, Ellon
 1870 Ryrie, Robert, 34 Park Street, Grosvenor Square, London
 1880 St Clair, J Sutherland, 99 High Street, Musselburgh
 1856 Salmon, J, The Linn, Johnstone
 1871 Salmond, David S, 40 St Enoch Square, Glasgow
 1858 Salmond, James, Cairns, Arbroath
 1898 Salmond, R, Nether Balfour, Durris
 1886 SALTOUN, Right Hon Lord, Philorth House, Fraserburgh
 1875 Sanderson, James, care of Mr Elder, West Yard House, Carnwath

Admitted

- 1884 Sanderson James, 8 Manor Place, Edinburgh
 1864 Sanderson, William, Forthland House, York Road, Timty, Edinburgh
 1855 SANDILANDS, Hon James, 31 Princess Gate, London
 1884 Sandilands, R, South Cumberhead, Lesmahagow
 1870 Sandison Alex, Urrasound, Unst
 1881 Sandison Marcus, Natal—Free Life Member
 1873 Sands, James, Greenfoot, Gungahook
 1870 Saunders E B, Hutton Grange, Gasborough, Yorkshire
 1884 Searth, Robt, Binscuth, Kirkwall
 1851 Seobie, John, Keoldale Laus
 1875 Seobie, Neil F, late of Hawkhill, Inverness
 1854 Seoon, Kenneth, 46 Bankellor Street, Edinburgh
 1876 Scott Alexander, Towie Balcly, Aberdeen
 1875 Scott, Alex, 3 Bellfield, Portobello
 1880 Scott, Alexander, 24 Mearns Street, Greenock
 1886 Scott Alex, Newtonlees, Dunbar
 1883 Scott, Alex E, Noss, Wick
 1876 Scott Andrew T S of Crosswoodhill, 1 Hill Street, Edinburgh
 1864 Scott R Right Hon Lord Charles, Dalkeith
 1857 Scott, C, Newtonlees, Dunbar
 1884 Scott, Charles, Milnington Hawick
 1880 Scott, Charles, South Africa (care of John Scott, 4 Elliot St, Glasgow)
 1882 Scott, Colin William, Hawkhill, Largo
 1878 Scott, David Francis Meadowfield, Duddington, Edinburgh
 1866 Scott, D G C, Masonsden, Brechin
 1880 Scott, Ebenezer Eskine, C A, 10 Castle Street, Edinburgh
 1877 Scott, Lieut Col Francis Cunningham, O B
 1863 Scott, George, Caverton Mill, Kelso
 1883 Scott, George R, Commercial Bank, Dunbar
 1859 Scott, Hercules, of Brotherton, Johnshaven
 1882 Scott, Hugh James Elbank, Gala House, Galashiels
 1883 Scott, The Hon J C Maxwell, of Abbotsford, Melrose
 1868 Scott, James, Bogton, Bishopniggs
 1862 Scott, James, of Laster Tulloch, Stonehaven
 1878 Scott, James, Distiller, Galloway Tower, Wishaw
 1878 Scott, James Addison, of Wooden, Kelso
 1882 Scott, James B, Eyewraes Farm, Linwood
 1870 Scott, Maj Gen James C, United Services Club, Edinburgh
 1873 Scott, James G, Hill of Ruthven, Perth
 1826 Scott, J, Finnart House, Greenock
 1870 Scott, John, Clebrig, Largo
 1881 Scott, John, Hillhead, St Andrews
 1883 Scott, John, Oldtown, Culduthel, Inverness
 1879 Scott, John, Gallin Cottage, Aberfeldy
 1880 Scott, John, of Gala, Galashiels
 1881 Scott, Rev John, Camelon Manse, Falkirk
 1885 Scott, Prof John, 68 Princes Street, Edinburgh
 1868 Scott, John, Springfield House, Uddingston
 1881 Scott John Corse, of Sinton, Hawick
 1877 Scott, John, Lindsay, of Mollanoe, Castle-Douglas

Admitted

- 1863 Scott, John Scott Elliot, Kirrdean, Newcastleton
1868 Scott, Malcolm, Bogton, Bishopbriggs
1872 Scott, Peter, Whiterig, Aytoun
1841 Scott, Captain Robert, late H.E.I.C.S.
1872 Scott, Ralph Erskine, C.A., 10 Castle Street, Edinburgh
1863 Scott, Robert, Falmash, Hawick
1874 Scott, Robert, Easter Manbein, Elgin
1882 Scott, Robert, Turin Mains, Forfar
1878 Scott, Robt. A., Dormont Grange, Lock-
erbie
1875 Scott, Robt. Sinclair, Craigievar, Wemyss
Bay
1881 Scott, Ronald, 157 Crown Street, Aber-
deen
1884 Scott, Thos., South Woodend, Bonny-
bridge
1863 Scott, T., of Mersington, Whitton, Kelso
1860 Scott, T. Robson, of Newton, Jedburgh
1861 Scott, Right Hon. Lord Walter, Dalkeith
1863 Scott, W., Mervinslaw, Jedburgh
1855 Scott, William, Wester Rora, Mintlaw
1875 Scott, William, Condorat, Airdrie
1863 Scott, William, Culivait, Dumfries
1857 Scott, William, Urquhart Road, Old
Meldrum
1883 Scott, Wm., Pitforthie, Brechin
1863 Scott, Sir William, of Ancrum, Bart.,
Jedburgh
1872 Scoular, John, Crook, Stirling
1873 Scrimgeour, Peter, Balboughy, Perth
1865 SEAFIELD, Right Hon. the Earl of,
Mayne House, Elgin
1875 Seatter, Wm., Saviaskall, Rousay, Orkney
1872 Selby, B. P., Paston, Coldstream
1872 Selby, Robert, late Haesendean Bank,
Hawick
1849 Sellar, P. Plenderleith, Hartfield, Tain
1885 Sellar, Robert H. N., Implement Maker,
Huntly
1867 SEMPELL, Right Hon. Lord, Fintray
House, Aberdeen
1877 Semple, William, Mouswald Banks,
Ruthwell, R.S.O.
1848 Seton, George, Advocate, 42 Greenhill
Gardens, Edinburgh
1859 Seton, Henry, V.S., Tollcross, Edinburgh
1863 SHAND, Hon. Lord, 30 Heriot Row,
Edinburgh
1868 Shand, Geo., Ordens, Boyndie, Banff
1870 Shand, John, M.D., 34 Albany Street,
Edinburgh
1886 Shand, R. S. Kynoch, of Hillside, Keith
1882 Shand, Thomas Livingstone Reid, of
Fawayde, Bervie
1864 Shand, William (late Crichton, Ford),
New York
1884 Shankland, Wm., Achnacross, Lismore
1844 Sharp, James, Helensburgh
1881 Sharp, James, Viewfield, Blackford,
Perthshire
1883 Sharp, John, South Forr, Crieff
1878 Sharp, J. J., Edwington, Gifford—*Free
Life Member*
1871 Sharp, Peter, Bardrill, Blackford
1872 Shaw, Chas. G., Ayr
1883 Shaw, Duncan, W.S., Inverness
1860 Shaw, Harry, Bogden, Tarland
1863 Shaw, James, Skatthmuir, Coldstream
1868 Shaw, James, Tillylating, Lumphnan
1888 Shaw, James T., Mungastel, Morvern
1888 Shaw, John A., Lower Blackbuile, Inver-
ness
1884 Shearer, John, Maybank Works, Turfiff
1883 Shennan, John K., Balig, Kirkcudbright
1883 Shennan, Robert, Balig, Kirkcudbright
1883 Shepherd, John, Lunzie, Brechin
1882 Sheppard, Rev. H. A. G., of Rednock,
Port of Monteith

Admitted

- 1883 Sheppard, Thomas, Moonzie, Cupar-
Fife
1865 Shepherd, George, Shethin, Tarves
1875 Sheriff, G., jun., Glengyle, Invernaid
1864 Sheriff, John Bell, Carronvale, Larbert
1872 Shiel, Andrew, Implement Dealer, Cold-
stream
1883 Shield, John T., East Mains of Rossie,
Montrose
1877 Shields, James, Byers, Bathgate
1871 Shields, John, Balhousie Castle, Perth
1887 Shields, John, Auctioneer, Linlithgow
1885 Shiell, John, Solicitor, Brechin
1866 Shies, Geo. (late Balgove, St Andrews),
Manitoba
1884 Shillinglaw, William, Simprim, Cold-
stream
1882 Shirlaw, James, Carlin, Motherwell
1847 Shirriff, David, Muirton, Drem
1850 Shirriff, Samuel D., North Berwick
1854 Shortreed, R., Attonburn, Yetholm
1877 Sider, James, Gourdie, Dunkeld
1878 Sievwright, W. (late Solicitor, Lerwick),
New Zealand
1866 Sim, Alexander, 14 Leslie Place, Aber-
deen
1870 Sim, Henry, Cattle Salesman, Inver-
ness
1875 Sim, John Fraser, Oban
1879 Sime, Alex., Dumbarnie, Largo
1830 Simpson, Alex. Horatio, late Hayes,
Uxbridge
1880 Simpson, Alexander, Wallyford, Mussel-
burgh
1879 Simpson, Alex., late Inverness
1883 Simpson, Alex., Duff House, Banff
1853 Simpson, George, Bedrule, Jedburgh
1868 Simpson, George (late South Burrel-
dales, Alvah, Banff), America
1869 Simpson, George, 2 Lauder Road, Edin-
burgh
1878 Simpson, James, North Lethans, Kin-
ross
1878 Simpson, James, Tower, Alloa
1875 Simpson, John, Drumfornk, Helens-
burgh
1878 Simpson, John (Auchinachie & Simp-
son), Keith
1880 Simpson, John, 6 Greenmount Villas,
Burntsland
1885 Simpson, John, Implement Maker,
Peterhead
1878 Simpson, Thos., West Byres, Ormiston
1874 Simson, C. S., of Threepwood, 7 Nelson
Street, Edinburgh
1861 Simson, George, Courthill, Kelso
1871 Simson, Thos., late Skelpie, Cupar
1873 SINCLAIR, The Right Hon. Lord, 55 On-
slow Square, London, S.W.
1859 Sinclair, Arch., late Minari, Inveraray
1883 Sinclair, Charles G., Linthaughlee, Jed-
burgh
1883 Sinclair, David, of North Loirston, Aber-
deen
1857 SINCLAIR, Sir J. G. T., of Ulbster, Bart.,
Thurso Castle, Thurso
1886 SINCLAIR, Sir John B. G. of Dunbeath
Bart., Barrock House, Wick
1875 Sinclair, John, Achintee, Fort-William
1869 Sinclair, Peter, Kilmartin
1864 SINGLAIR, Sir Robert C., of Stevenson,
Bart., Achvardsdale Lodge, Reay,
Thurso
1884 Sinclair, R. S. T., Seafeld Estates Office,
Elgin
1886 Sinclair, Thomas, Whitehall, Stronsay
1872 Sinclair, W. S. Thomson, of Freshwick,
Dunbeath Castle, Caithness
1850 Siveright, James, The Grove, Torquay
1877 Skead, George, Royal Bank, Wishaw

Admitted

- 1876 Skeen, George, Maikle Fiddes, Drum
lithie
1881 Skene, Wm F, W S, D C L, LL D,
20 Inverleith Row Edinburgh
1823 Skinner Cuptun C G Macgregor, late
Carisbrooke House, Isle of Wight
1856 Skinner James, Woodsdale, Aberdeen
1859 Skinner, W, of Corry, W S, City Clerk,
35 George Square, Edinburgh
1874 Skinner, William M, Drum, Ballin
dalloch
1857 Skirving, Adam, of Cloys, Dalbeathie
1846 Skirving, R Scot, 22 Drummond Place,
Edinburgh
1886 Skirving, Thomas M, Niddrie Mans,
Liberton
1884 Slater, Andrew, Huthburn, Kirkcudbright
1855 Slater, Andrew, Haystown, Peebles
1856 Sleigh, John, Strichen Vains, Strichen
1881 Slessor, Rev Alexander, The Manse,
Balfour
1877 Slog, Archibald Vincent Smith, of In
verna and Carmyle, 5 Drummond
Place, Edinburgh
1863 Slupper, R B, late 427 New Cross Road,
London, S E
1883 Sloan, Hugh, Gillenbie, Lockerbie
1878 Sloan, James, Coachbuilder Dumfries
1870 Sloan, John Buchanan, Patna, Ayrshire
1863 Sloan, William, Brierlyside, Monkton,
Ayr
1877 Smul, James, Commercial Bank,
Edinburgh
1859 Small, Jas of Durnanern, Pitlochry
1857 Small, Landsat, of Foodie, Cupar
1857 Small, W J, Dundee
1864 Smart, Alex, Bow, Stow
1864 Smart, Jas, Liberton Park, Liberton
1858 Smart, John, late Glasgowege, Black-
burn, Aberdeen
1850 Smart, John Currie, 54 George Square,
Edinburgh
1873 Smeaton, Rev John, of Coul, Tull
allan Manse, Kincardine, Alloa
1884 Smellie, Wm, Carbars, Wishaw
1857 Smith, Adam, Camelon House, Camelon,
Falkirk
1881 Smith, Adam Davidson, C A, 29 St
Andrew Square, Edinburgh
1883 Smith, Alex, Inchcormie, Rothiemay,
Huntly
1852 Smith, Alex (A & W Smith & Co),
Westbourne, Govan, Glasgow
1868 Smith, Alex, Letham, Berwick
1864 Smith, Alex P, Munlochy Farm, Mun
lochy
1856 Smith, Andrew, Milnwood, Lanark
1868 Smith, Andrew, Longmddyry
1856 Smith, Andrew, Whitefield, Coupar
Angus
1885 Smith, Arthur, Oakbank Cottage, Kings
gate, Aberdeen
1853 Smith, Charles, Whittinghame, Preston
Luth
1876 Smith, Charles, 36 Howard Street, Glas
gow
1876 Smith, D W E, North Elphinstone,
Tranent
1878 Smith, Edward, Nunholm House, Dum
fries
1883 Smith, E Hedley, Whittinghame,
Prestonkirk—Free Life Member
1864 Smith, F C, Hoping, Cockturnspath
1862 Smith, George, Sun Foundry, Glasgow
1886 Smith, George B, S S C, 37 Charlotte
Square, Edinburgh
1872 Smith, G P, late 3 Viewforth Terrace,
Edinburgh
1867 Smith, Hugh, 9 Kelvinade Terrace
(North), Glasgow

Admitted

- 1855 Smith, James, of Olig, Thurso
1857 Smith, James, Broomhill, Patrick
1869 Smith, J, Vullochard, Ballindalloch
1883 Smith, James, Standingstone, Inver
holm, Castle Douglas
1877 Smith, James, Auchin, Fisherie, Turiff
1878 Smith, James, 89 Grassmarket, Edin
burgh
1879 Smith, James, Kelso
1873 Smith, James, Pittengardner, Fordoun
1855 Smith, James, Burnahugrie, Strichen
1872 Smith, Jas F, Fieburn Mill, Cold
stream
1878 Smith, James T, Bruce Villa, Loch-
maben
1882 Smith, James Thrift, Daloch, Inver-
keithing
1873 Smith, John, Bilmun, Fettercairn
1865 Smith, John, Inverallan House, Grian-
town
1874 Smith, John, Drumduan, Deas, Aber-
deen
1850 Smith, John, Mowbray, Kelso
1852 Smith, J Gordon, Minmore, Ballindal-
loch
1877 Smith, John Guthrie, Mungdock Castle,
Vilngavie
1855 Smith, J S, Northern Agricultural
Company, Aberdeen
1867 Smith, John Turnbull, C A, 5 Belgrave
Place, Edinburgh
1881 Smith, Ralph Colley, Oimiston, Jed-
burgh
1864 Smith, Robert, of Bientham Park,
Stirling
1877 Smith, Robert, Dalbible, Dumfries
1872 Smith, Robt G, Georgeville, Mid-
Calden
1854 Smith, R M, 4 Bellevue Crescent,
Edinburgh
1884 Smith, Thomas, Mans of Fowles, Dun-
dee
1870 Smith, Thomas, Ladyland Dumfries
1873 Smith, Thomas Kennedy, Penhillan
House, Auldirth
1877 Smith, Thomas, Powrie, Dundee
1850 Smith, Thomas, The Castle, Maybole
1886 Smith, Thomas, Inverlovat, Newport,
Fife
1887 Smith, Thomas A, Riddletonhill, St
Boswells
1884 Smith, T V, of Aidtonish, Oban
1864 Smith, Thos H, National Bank, Edin-
burgh
1854 Smith, Wm, Melkington, Cornhill,
Northumberland
1856 Smith, Wm, West Drums, Brechin
1838 Smith, William, Middleton, Balquharn,
Inverurie
1860 Smith, William, Banker, Monieve
1865 Smith, W, of Benholm, Johnshaven
1866 Smith, William, New Mans of Urie,
Stonehaven
1884 Smith, Wm Balruddery, Dundee
1878 Smith, William, Greenhead, Pencoat-
land
1878 Smith, William, Crugdhu, Glasserton
1882 Smith, William, Bridgend, Ceis
1881 Smith, William Anderson, Ledaig,
Argyllshire
1873 Smith, Wm B, 32 Ashchurch Grove,
London, W—Free Life Member
1885 Smollett, P B, of Bonhill, Cameron
House, Alexandria, N B
1876 Smythe, D M, jr of Methven, Perth
1846 Smythe, William, of Methven, Perth
1880 Somervail, James A, Hawshaw, Cold-
stream
1882 Somervell, James, of Sorn, Sorn Castle,
Mauchline

Admitted

- 1867 Somerville, George Purdie, Muirhouse, Carnwath
 1858 Somerville, James, S.S.C., 23 South Blacket Place, Edinburgh
 1881 Somerville, William, 46 Findhorn Place, Edinburgh
 1870 Somerville, Wm., Merchant Glasgow
 1887 Somerville, William, Easter Halket, Dunlop
 1884 Soutar, D., Trinity Villa, Brechin
 1860 Soutar, Right Hon. the Earl of, K.T., Kinnaird Castle, Brechin
 1877 Spalding, Augustus Frederick Montague, of Holm, New Galloway
 1865 Speirs, W.R., Writer, Kirkcaldy
 1881 Spence, James, Forneith, Blaugowrie
 1886 Speir, John, Newton Farm, Newton, Glasgow
 1879 Spen, Robert, Blairpark, Dalry, Ayrshire
 1879 Speir, R.T.A., Culdee Castle, Muirhill
 1883 Speirs, T. Dundas, late Burnfoot, Houston
 1860 Spence, Adam White, late Glencurn House, Crief
 1875 Spencer, A., 160 Hope Street Glasgow
 1863 Spowart, T., of Broomhead, Dunfermline
 1881 Sproat, George B., Writer Tobermory
 1870 Sproat, Robert, Lennox Plunton, Kirkcudbright
 1881 Sproat, Wm., Procurator Fiscal, Tobermory
 1878 Sproat, William T., Borness, Kirkcudbright
 1887 Sprut, Major General John, of Riddell, Lilliesleaf
 1836 Stables, W.A., Murn
 1860 Stair, Right Hon. the Earl of, K.T., Lochinch Castle, Kennedy Station
 1883 Stalker, Donald, Forrester, Muirthly Castle, Muirthly
 1887 Stanhope, John Montague Spencer, Cannon Hall Barnsley, Yorkshire
 1880 Stansfeld, Capt. John, Dunmald, Montrose
 1854 Stairforth, John, Architect, 37 York Place, Edinburgh
 1875 Stark, Matthew C. Westerton, Doune
 1862 Stark, Ralph, of Summerford, Camelon, Falkirk
 1870 Stark, Robert Kirkcaldy
 1861 Stark, W., 133 Watt Street Glasgow
 1863 Statter, Thos., jun., Stand Hall, Whitefield, Manchester
 1872 Staver, Archd., of Hoscote, Hawick
 1861 Steidman, James, Impendern Jedburgh
 1884 Steedman, James, of Inver, Kinross
 1862 Steedman, J., late Charleston, Dunfermline
 1884 Steedman, Thomas, Bank Agent, Kinross
 1860 Steel, Adam, yr. of Blackpark, Perth
 1870 Steel, Major Gavin of Belintore, 17 Abercromby Place, Edinburgh
 1880 Steel, John, Lochwood, Gairloch
 1885 Steele, Alexander, Burnhead, Newmilns
 1853 Steele, Robert, Greenock
 1874 Steill, Gurray, R.S.A., 4 Palmerston Place, Edinburgh—*Animal Portrait Painter to the Society*
 1854 Stegmann, Conrad, late Merchant, Leith
 1879 Stein, John, Broomhouse, Dunbar
 1860 Stenhouse, James, South Gyle, Corstorphine
 1861 Stenhouse, James, Turnhouse, Cramond Bridge
 1876 Stenhouse, James S., of Northfod, Dunfermline

Admitted

- 1884 Stephen, Donald, Northtown, Bursay, Oakney
 1868 Stephen, James, Conglass Inverurie
 1880 Stephen, James, Black Culphum Binn
 1884 Stephens, H.C., Avenue House, Finchley, London
 1880 Stephenson, Clement, V.S., Sandford Villa, Newcastle
 1874 Stephenson, Richard, Chapel, Dun-
 1881 STEWART, Sir Allan Henry Seton, of Allanton, Bait, Touch, Stirling
 1840 Stewart, Andrew, of Auchlunkant, Perth
 1884 Stewart, (D., of Dalguise, Dunkeld
 1877 Stewart, D., of Stewart Hall, Stirling
 1870 Stewart, D.K. Factor, Dupplin Estate Office, Munda, Alerdal, Leith
 1876 Stewart, H.J. Gow, Fowler's Park, Hawkhurst, Kent
 1864 Stewart, James, Dalkeith Park, Dalkeith
 1884 Stewart, J.H., Selms, Kirknewton
 1860 Stewart, John, of Ballechin Tullypowrie, Perthshire
 1870 Stewart, Patrick, Middleleigh, Moffat
 1864 Stewart, Captain Robert, of Westwood, West Calder
 1855 Stewart, Robert, Dundale, Gravesend, Kent
 1833 Stewart, William, London
 1870 Stevenson, Alex. Shannon, of Ach-na-Clouch, Lanark
 1850 Stevenson, Allan, Architect, Ayr
 1855 Stevenson, Andrew, 17 Learmonth Terrace, Edinburgh
 1865 Stevenson, David, Auchengate, Troon
 1860 Stevenson, David, Alan, C.E., 64 George Street, Edinburgh
 1862 Stevenson, John, Gt. St. Denny
 1862 Stevenson, John, Lillyhall House, Dunfermline
 1853 Stevenson, John B. (late Westfield, Queensferry) New Zealand
 1864 Stevenson, John, Chanrue, Dumfries
 1860 Stevenson, Robert, late Banker, Edinburgh
 1852 Stevenson, Thos., 12 Brighton Place, Port Bello
 1877 Stevenson, William, Holland, Stronsay, Kirkwall
 1872 Stevenson, Wm., Lochgrog, Bishopbriggs
 1860 Stewart, Alexander, 6 Market Street, Perth
 1870 Stewart, Rev. Alex. W. Farlane, Inverchoulun, Greenock
 1871 STEWART, Sir A. Douglas, of Grandtully, Bait, Muirthly
 1868 Stewart, Charles, Thindun, Killin
 1880 Stewart, Major Colvin, of Carnamora, Newton Stewart
 1842 Stewart, David, London
 1860 Stewart, David W. Cartland, Lanark
 1870 Stewart, Donald, Kingussie
 1884 Stewart, D.A., Georgebrook, Portree
 1861 Stewart, Donald, Little Faidle, Melkior
 1870 Stewart, Duncan, Cuthank, Ewe, Langholm
 1877 Stewart, Duncan, Loal, Bankfoot, Perthshire
 1877 Stewart, Duncan, Callander
 1861 Stewart, Duncan, McNachyle, Callander
 1863 Stewart, Commander Duncan, R.N., Knockroch, Campbeltown
 1881 Stewart, Duncan D., Castlehill, Inchture
 1844 Stewart, G., Kirkchrist, Kirkcudbright
 1861 Stewart, George M.F., of Buny, Linlithgow

Admitted

- 1857 Stewart H G Murray, of Broughton, Cally, Gatehouse
 1871 Stewart, James Blair Athole
 1876 Stewart, James Butcher Coupar Angus
 1881 Stewart, James 41 Oswald Street, Glasgow
 1881 Stewart, J, Pitkelly, St Martins Perth
 1888 Stewart, James, Heathfield Irvine
 1885 Stewart, James of Garroch, Largs
 1888 Stewart, J, F New Mill Stanley
 1873 Stewart, John Buchastle, Callander
 1854 Stewart, John, Burnside Strathaven
 1852 Stewart, John, of Lnsay, Scorrybreck, Portree
 1878 Stewart, John, Auchindellan, Clatt Aberdeenshire
 1879 Stewart, John, West Briggs, Cramond Bridge
 1853 Stewart, John Archd Shaw, 71 Eaton Place, Belgrave Square, London
 1871 Stewart, Capt John C, of Farnacloch, Ledaig
 1887 Stewart, J C, yr of Inghison Ratho
 1881 Stewart, John Lorne, of Coll, Argyllshire
 1884 Stewart, J R, 10 Salisbury Road, Edinburgh
 1882 Stewart, Joseph Crumloch, Stirling
 1869 Stewart, Mark John of Southwick, M.P., Ardwell Wigtonshire
 1848 STEWART Sir M R Shaw, of Greenock and Blackhall, Bart, Ardowan, Greenock
 1879 Stewart Michael Hugh Shaw, of Carnock M P Stirling
 1863 Stewart, Neil P, Vaynol Bungoi, North Wales
 1860 Stewart, Peter, Dornock Mains Annan
 1856 Stewart Robert, of Inghison, Ratho
 1873 Stewart, Robert, Cornton, Bridge of Allan
 1886 Stewart, Robert, of Culgraff Castle Douglas
 1846 Stewart, Robt H Johnstone, of Physgill, Glasserton, Whithorn
 1881 Stewart, Robert K of Mudostown, Newmuns Lanarkshire
 1857 Stewart, Samuel, 1 Garfield Terrace, Conn Hall Road Leytonstone Essex
 1884 Stewart, Thos, Whinniemun, Perth
 1850 Stewart, William, Tonreoch, Campbelltown
 1857 Stewart, William, late 24 Maclean Street, Plantation, Glasgow
 1878 Stewart, Captain Wilham, of Shambellie, Dumfries
 1855 Still, Alex W Nether Anguston, Peterculter, Aberdeen
 1855 Still George, Strathray, Kinellau, Blackburn Aberdeen
 1877 Stirling, Andrew, 80 Eccleston Street, London, S W
 1868 STIRLING Sir C E F, of Glorat, Buit, Milton of Campsie
 1864 Stirling, Captain Gilbert, Royal Horse Guards London
 1857 Stirling, Major Graham of Craigbarnet, Lennoxtown
 1887 Stirling, James, Dunduff, Braco, Perthshire
 1887 Stirling, James, of Guden, Kippen
 1883 Stirling, John, of Fairburn, Beuly
 1865 Stirling, Colonel John S, of Gaugunock, Stirling
 1879 Stirling, Patrick, of Kippendavie, Dunblane
 1881 Stirling, Robert, Pendreich, Bridge of Allan
 1889 Stirling, T Graham, of Strowan, Crief

Admitted

- 1855 Stirling, William, of Tarduf, Lanthgow
 1867 Stobo Andrew, Porters town, Auldgrith
 1856 Stobo, James Hallidayhill, Auldgrith, Dumfries
 1860 Stobo, Robert, of Hallidayhill, Auldgrith, Dumfries
 1855 Stodart David, Banker, Lanark
 1875 Stodart, George, Netherston, Newton Veuns
 1851 Stodart John, late Cawder Cult Farm, Mayhill
 1878 Stodart J A, Land Steward, Portmore, Eddleston
 1880 Stodart Thomas Tweedie, of Olver, Rachen Mill Biggar
 1855 Stodart William Wintonhill Trumet
 1884 Sturdy, Norman, Thurstonheld Tannery, Carlisle
 1850 Stone, W G R, Lanton Jedburgh
 1861 STOUT Right Hon Viscount, Seone Palace Perth
 1884 STORRY Rev A R, The Manse, Carmunnock
 1883 Strachan, Alexander, Western Fowls, Alford
 1874 Strachan, Andrew, Saphock, Old Meldrum
 1878 Strachan, Charles Tillyorn Taland
 1876 Strachan, George, Canterland, Montrose
 1855 Strachan, Lewis, Cluny of Raemorr, Brunchory
 1877 Stirling, J, High Crewburn Strathaven
 1875 Strathairn, Robert W S, 12 South Charlotte Street Edinburgh
 1867 STRATHAIRN Right Hon the Earl of, Glams Castle Glams
 1874 Stratton David, 13 Middleby Street, Edinburgh
 1883 Strother, Alexander, Balmcree Inverness
 1878 Struthers, William, Logan Mains, Canobie
 1882 Stuart Alexander Munhouse, Symington, Kilmarnock
 1865 Stuart Alexander of Leathers Turf
 1863 Stuart Alexander C, of Eaglescaunie, Haddington
 1873 Stuart, Charles, Tomindugle, Knockando, Crangellie
 1885 Stuart D B Burnett, of Dens & Churchie, Mintlaw
 1881 Stuart, J Windsor, Bute Estate Office, Rothesay
 1883 Stuart, W G, Inverness
 1847 SUTHERLAND, His Grace the Duke of, K G Dumblinn, Golspie
 1870 Sutherland, Alexander, Rampyard, Witten, Golspie—*Free Life Member*
 1853 Sutherland Eric, late Lanarkwood, Elgin
 1866 Sutherland, E C, of Skibo, Skibo Castle, Dornoch
 1849 Sutherland, George, of Forse, Wick
 1871 Sutherland, George, The Peel, Libermuir, Perth
 1865 Sutherland, James B, of Lanehead, S S C, 10 Windsor Street, Edinburgh
 1852 Sutherland, S, Springvale Sheffield
 1877 Sutor James, The Colie, Rochabers
 1858 Swan, James, Love Stock Agent, 87 Leamington Place, Edinburgh
 1869 Swan, James Inverpeffer, Carnoustie
 1866 Swan, P D, Kirkcaldy
 1884 Swan, E G Duns
 1855 Swan, Thomas, Love Stock Agent, 87 Leamington Place, Edinburgh
 1871 Swan William, Balhargie, Monifieth
 1861 Swan, James, Collierhall, Douglas
 1865 Swanwick, R, Royal Agricultural College Farm, Cirencester

Admitted

- 1857 Swinburne, Capt., R. V. of Eilan Shona, Strontian
 1861 Swinton, Alan, Swinton House, Coldstream
 1841 Swinton, Archibald Campbell of Kimmerghame Duns
 1880 Swinton, John Laif Campbell, yr. of Kimmerghame Duns
 1862 Swinton, P. Burn, Holyn Bank, Gifford
 1853 Sydsert, Thomas Buchan of Ruchlaw Prestonkirk
 1874 Syme, David, George IV Bridge Edinburgh
 1885 Syme, David Fraser C. A., 11 York Buildings, Edinburgh
 1859 Syme, George, Milnforth
 1875 Syme, James, Millbank Edinburgh
 1852 Syme, James Gordon, 33 Laurier Road Grange Edinburgh
 1857 Syme William Clagie Leuchars
 1868 Symington, G. C., Kirkcubright Kirkcubright
 1876 Symington Jas., 55 Fountainhall Road, Edinburgh
 1848 Symington T., late East-Indie, Pemick
 1886 Symington Gilbert, Glenluce
 1886 Symons, John, Solicitor Dumfries
 1874 Tait, George, V. S., Elgin
 1875 Tait, George, jun., V. S., Elgin
 1880 Tait, George, Milnegraden Mans. Coldstream
 1846 Tait, James, Banker, Kelso
 1872 Tait, James, 4 Montebello, Joppa
 1876 Tait, John Currie, Inverurie
 1862 Tait, William Reid, Mina Villa Thurso
 1878 Talbert, Peter, Glenelicht, Blairgowrie
 1862 Tawse John, W. S., 11 Royal Prince Edinburgh
 1859 Tawse, John Wadrype, W. S., 49 Queen Street, Edinburgh
 1877 Tayleur, Edward, of Dalskaurth Dumfries
 1863 Taylor, Alexander Pathhead Ford
 1858 Taylor, Geo., of Kinkonhill, Montrose
 1876 Taylor, Hugh, Kamashill, Hurlford, Kilmaunock
 1873 Taylor, James, Land Steward, Buchanan, Dymen
 1876 Taylor, James Tom, Wintlow
 1855 Taylor John B., Seton West Mans, Prestonpans
 1861 Taylor, John Redcastle, Arbroath
 1870 Taylor, Joseph Potholm, Lanholm
 1853 Taylor, M., Letter Farm, Cove, Greenock
 1884 Taylor, Peter, Lochend Edinburgh
 1857 Taylor, Robert, Drumfrenny, Banbury
 1877 Taylor, Robert, Solicitor Stirling
 1872 Taylor, Thos., Seed Merchant, Dalkeith
 1880 Taylor, William, Park Mans, Inchinnan Paisley
 1884 Templeton, Matthew, Drummorie, Kirkcubright
 1857 Templeton, Robert, Rannachan, Campbeltown
 1853 TERNANT Sir C., of The Glen, Bart., Innerleithen
 1881 Tennant, James, Vitriol Works, Carnoustie
 1872 Tennant T., of Priestgill Strathaven
 1873 Terra, James, jun., Dullomun, Blair Adam
 1881 Tervit, John Boat, Thankerton
 1879 Theim, Albert M., Windsor Hotel, Princes Street, Edinburgh
 1884 Thun John, Fernhurst, Stow

Admitted

- 1877 Thom Alex., Chapelhill Peebles
 1871 Thom James, of Leden Tiquirrit, Strathmillo
 1875 Thom, James F., Wells, Green, W. N. J. Gates
 1879 Thom, Robert Dick Pitlochrie Gate-side, Strathmiglo
 1872 Thomas Wm Pirnacle Ancrum Tedburgh
 1871 Thompson Alexander Birmerl, Port William
 1876 Thompson Alexander, Ironmonger Dumfries
 1876 Thompson George of Primcadden 41 Vauichil Street Aberdeen
 187 Thompson Henry of High Green Run-hope Otterburn
 1872 Thompson John Bullieknowe Kel-say
 1874 Thomas Geo Hunter of Aberlenn Adv. Cate Steniff of Cathness, Orkney and Shetland, 13 Charlotte Square, Edinburgh
 1877 Thomson A. of Vamhill St. E. Swells
 1873 Thomson, Alex., Mort n House, Lothian Burn
 1876 Thomson Alex. M. Secretary Angus Agricultural Society Arbroath
 1880 Thomson Andrew, 10 Inverleith Place Edinburgh
 1867 Thomson, Charles W., C. A., 16 Lennox Street Edinburgh
 1853 Thomson, David, V. S., Inverness
 1867 Thomson Duncan M. (late Stirling), Church
 1866 Thomson George, Hopton, Ancrum, Jedburgh
 1851 Thomson, James Mungoswells Duns
 1858 Thomson, James Land Valentin, 23 George Street Edinburgh
 1866 Thomson, Jas. Dunnald Montrae
 1879 Thomson James, Coach Works, Stirling
 1883 Thomson James H., 14 Great George Street Glasgow
 1879 Thomson John Laggan Gatehouse
 1877 Thomson John Carr nfiats, Grange mouth
 1869 Thomson John 41 Mitchell Street, Glasgow
 1875 Thomson John Prospect Hill Cuthcart
 1877 Thomson Rev John, of Rosilee Hawick
 1876 Thomson John jun New Holland St. Maria Holm Orkney
 1846 Thomson Colonel John Anstruther of Chirkton Colnshurh
 1867 Thomson John Comie Sheriff of Forfar 24 Great King Street Edinburgh
 1874 Thomson J. Grant Wood Manager Grantown Strathpey
 1869 Thomson, J. B., Lae, Dumfries
 1870 Thomson Lockhart, 55 C. 114 George Street Edinburgh
 1873 Thomson Mitchell, 12 Queen Street, Edinburgh
 1859 Thomson Peter Conservative Club, Princes Street, Edinburgh
 1874 Thomson Robert, Burnbank, Blair Drummond
 1878 Thomson Robert of Brie Dumfries
 1855 Thomson, Samuel James Doune
 1862 Thomson, Seton, Kinnaird House, Lebert
 1883 Thomson S. M. Merchant Lanark
 1875 Thomson Thomas, Bankhead, Alka
 1881 Thomson, Thomas, Cardon Abernethy, Perthshire
 1850 Thomson, Thomas, Merchant Glasgow
 1854 Thomson, W., 5 Torphichen Street, Edinburgh
 1873 Thomson, Wm Nyas, Stirling

Admitted

- 1875 Thomson, Wm, Aberdeen Town and County Bank, Tairland
 1878 Thomson, Wm, Caleynton, Aulduth, Dumfries
 1884 Thomson Wm, Smith Street, Kinning Park, Glasgow
 1872 Thomson, W A, 39 Commercial Street, Leith
 1875 Thomson, Wm G, 41 Mitchell Street Glasgow
 1870 Thorburn, David, Calgary, Tobermory
 1874 Thorburn David, Blockhouse, Stow
 1880 Thorburn M G, of Glenormiston, Innerkathen
 1877 Thorburn, Robert, Stonehill, Thanke-ton
 1882 Thorneycroft, James Burd, Portland Iron Works Hurlford
 1883 THRELW Right Hon Lord, Dunphail, Morayshire
 1872 Thyne John, 21 Danube street Edinburgh
 1870 Thyne, Wm, 4 Spring Gardens, Stock bridge, Edinburgh
 1888 Tiffen J H 4 Grosvenor Terrace, Hull — *Free Life Member*
 1844 Timms, Wm late of Hillfield, Stanmore Middlesex
 1886 Timms, H A, of Slugarie, New Gallo way
 1869 Tinning John, Lowther Street, Carlisle
 1886 Tivendale, William, Forester, Cessnock Galston
 1879 Tod Alexander, late Athendean, Lissawade
 1872 Tod, George, Carneyhill Dunfermline
 1870 Tod, James, Glenhill Lamash
 1877 Tod, James, Easter Cash, Strathmiglo
 1860 Tod, James Cartura, Currie
 1870 Tod, John W, W S, 66 Queen Street, Edinburgh
 1870 Tod, Thos M, West Brickly Kinross
 1851 Tod, William, Gospetry Minnathort
 1864 Tod, William of East Brackly, Kinross
 1864 Tod William, Glenree, Lamash, Arran
 1875 Todd Alexander Mouswald Grange, Ruthwell, R S ()
 1884 Todd, Andrew, 145 St Vincent Street, Glasgow
 1876 Todd David, 2 Dick Place, Edinburgh
 1858 Todd James, Gillespie, Glenluce
 1866 Todd, James, 119 South Marchmont Road, Edinburgh
 1884 Todd John, Tivawald Shaws, Dumfries
 1860 Todd, Wm, Auchness, Ardwell
 1878 Todd Wm, Balser, Sothe
 1841 Tophis, Robert, Glams Hotel Glamis
 1871 Terrace Archibald P, Keppelaw, Dalkeith
 1878 Terrace George Sisterpath, Duns
 1877 Terrace, Thomas A, Burnhouse Villa, Camps, Wilkinston
 1863 Terrace, T Laws, Whitesome
 1872 Terrace William, Camps Lime Works, Wilkinston
 1878 Torry, Adam Ogilvie, late Forfar — *Free Life Member*
 1877 Tough James, Mans of Drum, Drum oak Aberdeen
 1860 Trull James Christie, of Rattar, Caithness
 1878 Traill, Thomas of Holland Kirkwall
 1880 Traill, R M, Hobbuster, Orphur, Orkney
 1846 Traquair, Ramsay H, Colinton, Slateford
 1840 Trotter, Charles, of Woodhill, Blairgowrie

Admitted

- 1865 Trotter, Coutts, 17 Charlotte Square, Edinburgh
 1865 Trotter, Lieut Colonel H, of Morton Hall, Edinburgh
 1875 Trotter, Robert, Garguston, Muir of Old
 1866 Trotter, T C, 54 Park Street, Grosvenor Square London, W
 1869 Trotter, Lieut Colonel R A, of the Bush, Edinburgh
 1875 Troup Alexander, Strathmiglo
 1878 Tuke, Dr J Batty, Saughtonhall, Edinburgh
 1873 Tulloch, James, Dales, Inverkeithing
 1875 Tulloch, John Gringegreen, Forres
 1844 Turnbull, Alexander, Swinton Mill Farm Coldstream
 1877 Turnbull Archibald, Eldinshope Yarrow, Selkirk
 1874 Turnbull, David, W S, 5 South Charlotte Street, Edinburgh
 1878 Turnbull, David, late of Breweryyards, Hawick
 1881 Turnbull, George, Baldoukie, Tannadice, Forfar
 1857 Turnbull, Gregor, Merchant, Glasgow
 1881 Turnbull, James, Carnock Smithy, Larbert
 1868 Turnbull, James, Eastfield, Kelso
 1877 Turnbull, James, St Colme House, Aberdour, Fife
 1880 Turnbull, James, Tauldshope, Selkirk
 1844 Turnbull, John, of Abbey St Bathans, W S 43 George Square, Edinburgh
 1850 Turnbull, P, Little Pinkerton, Dunbar
 1877 Turnbull, Peter M, Smithston, Gartly
 1878 Turnbull, Thomas, Castlebank Mills, Dumfries
 1877 Turnbull, Walter, Tynemont Ormiston
 1863 Turnbull William J, Beaumont Cottage Sprouston Kelso
 1863 Turnbull, William George, Spittal, Jedburgh
 1875 Turner, Archibald, Kilchamaug, Whitehouse, Kintyre
 1838 Turner, D Corachave, Sandbank
 1859 Turner, F J, Mansfield Woodhouse, Mansfield, Nottingham
 1858 Turner, John, of Turner Hall, Ellon
 1864 Turner, J H, The Dean, Kilmarnock
 1873 Turner, Peter, Balsam Grove, Drumquhan, Ontario, Canada
 1876 Turner, Robert, Auchnarrow, Ballindaloch
 1883 Turner, Robt, Cairnton of Boyndie, Putebooy
 1868 TURNER, Sir William, M B, Professor of Anatomy, University of Edinburgh, 6 Elton Terrace
 1879 TWYFEDDLE, Most Noble the Marquis of, Yeater, Haddington
 1860 Tweeddie, George W, Ivy Hill, Warrminster, Nelson County, Virginia, U S
 1859 Tweedie, Alexander, Coats, Haddington
 1873 Tweedie, Alexander G, Hearthstone, Broughton, Peebles
 1884 Tweedie, David, Aether Howden, Lander
 1860 Tweedie, James, of Quarter, Rachan House, Bugar
 1871 Tweedie Richard, The Forest, Clydesdale Stud Farm, Douglass, Butler County, Kansas, U S A
 1855 TWYEDMOUTH, Right Hon Lord, Gulesachan, Beaulieu
 1878 Twentyman, John Murthwaite, Hawkrigg House, Wigton, Cumberland
 1888 Tytler, Edward G. F., of Aldoune, Inverness

Admitted

- 1863 **Tyler, James Stuart**, of Woodhouselee, W.S., 22 Young Street, Edinburgh
- 1878 **Udny, John Henry Fullarton**, of Udny and Dudwick, Udny, Aberdeen
- 1877 **Underwood, Peter**, Mains of Essich, Inverness
- 1877 **Unite, John**, 291 Edgeware Road, London, W.
- 1875 **Ure, George**, Wheatlands, Bonnybridge
- 1875 **Ure, George R.**, Hope Park, Bonnybridge
- 1882 **Ure, John**, 66 Washington Street, Glasgow
- 1874 **Ure, William**, Bogton, Larbert
- 1864 **Urquhart, B. C.**, of Meldrum, Old Meldrum
- 1870 **Urquhart, Major F. Pollard**, of Craigston, Turiff
- 1885 **Urquhart, John**, Cambusarie, Dornoch
- 1858 **Urquhart, J. G.**, of Vellure, Linlithgow
- 1882 **Urquhart, Robert, jun.**, Forres
- 1853 **Usher, John**, Stirling, Kelso
- 1872 **Usher, J., jun.**, Gatehousecote, Hawick
- 1885 **Usher, John**, of Norton, Ratho
- 1872 **Usher, Thomas, jun.**, Courthill, Hawick
- 1876 **Vallentine, George**, 53 Southesk Street, Brechin
- 1858 **Vallentine, J.**, Nether Affloch, Dun Echt
- 1877 **VANE, Sir Henry Ralph**, of Hutton in the Forest, Bart., Penrith
- 1860 **Vassal, Lieut.-General R.**, of Westbourne Street, Hyde Park, London
- 1878 **Veitch, Andrew**, Glirthon Kirk, Gatehouse-of-Fleet
- 1864 **Veitch, Chris.**, 24 Queen Street, Edinburgh
- 1867 **Veitch, Walter**, Grange Kinghorn
- 1850 **Vere, C. E. Hope**, late Ledard, Aberfoyle
- 1882 **Vere, James C. Hope**, of Craigie Hall and Blackwood, Lesmahagow
- 1867 **VERNON, Hon. Grenville E.**, M.P., Auchans House, Kilmarnock
- 1873 **Vilhers, Frederick Ernest**, Closesburn Hall, Thornhill
- 1880 **Waddell, Alexander**, of Palace, Jedburgh
- 1874 **Waddell, A. Puddle**, of Great Stuart Street, Edinburgh
- 1884 **Waddell, George**, Bonnyfield, Denny
- 1874 **Waddell, James**, Airdrie Hill, New Monkland
- 1872 **Waddell, John**, of Easter Inch, 4 St Andrew Square, Edinburgh
- 1869 **Waddell, Wm.**, Netherton, Whithorn
- 1857 **Wakefield, J. Collen**, late Eastwood, Thornliebank
- 1857 **Wakelin, John**, Oil Mills, Musselburgh
- 1877 **Walcot, John** (G. M'Callum & Co.), 13 Greenside Place, Edinburgh
- 1880 **WALDIE-GRIFFITH, Sir George**, of Hendersyde Park, Bart., Kelso
- 1870 **Walker, Alexander**, Stagebank, Heriot
- 1872 **Walker, Alexander John** (Bowland), 5 Manor Place, Edinburgh
- 1878 **Walker, Archibald**, Banker, Auchtermuchty
- 1847 **Walker, Charles** (late Drumblair), Australia
- 1884 **Walker, David**, Coullie, Udny
- 1861 **Walker, Fountaine**, of Ness Castle, Inverness
- 1857 **Walker, Francis**, Craignetherty, Turiff
- 1881 **Walker, George**, Port Elphinstone, Inverurie
- 1888 **Walker, George**, Wood Merchant, Inverness
- 1858 **Walker, Lieut.-Col. George G.**, of Crawfordton, Thornhill

Admitted

- 1875 **Walker, George A.**, Torbreck, Inverness
- 1863 **Walker, G. J.**, Portlethen, Aberdeen
- 1860 **Walker, James**, of Dalry, Hanley, Curostorphine
- 1884 **Walker, Jas.**, Limefield House, West Calder
- 1867 **Walker, James**, Grassmere, Stonewall, Winnipeg, Manitoba, Canada
- 1877 **Walker, James**, West Side of Brux, Kildrumny, Aberdeen
- 1857 **Walker, John**, late Eastfield, Springburn
- 1862 **Walker, John**, Hurley House, Mowbray, Cape Town
- 1872 **Walker, J. P. S.**, Veterinary Establishment, Littlegate, Oxford
- 1859 **Walker, Robert**, Altyre, Forres
- 1861 **Walker, Robert** (late Muirhall, Perth), San Francisco
- 1874 **Walker, Robert R.**, Queensland
- 1882 **Walker, Robert Houston**, of Hartwood, West Calder
- 1885 **Walker, Samuel**, Gallowhill, Carmunnock
- 1875 **Walker, Thomas**, Dempston, Auchtermuchty
- 1859 **Walker, W.**, South Quarter, Kingsbarns
- 1865 **Walker, Wm.**, Arduncart, Mossat
- 1864 **Walker, Wm.**, Kintrae, Ligin
- 1882 **Walker, Wm.**, Home Farm, Gartleston
- 1872 **Walker, Wm.**, Horse Dealer, Stirling
- 1835 **WALKER, Sir Wm. S.**, of Bowland, K.C.B., 125 George Street, Edinburgh—*Treasurer of the Society*
- 1808 **Walker, Wm. Campbell, jr.**, of Bowland, 5 Manor Place, Edinburgh
- 1864 **Walker, W. Q.**, Maxwellton of Irongray, Dumfries
- 1873 **Wall, George Y.**, Durham—*Free Life Member*
- 1882 **Wallace, George**, Banker, Cupar-Fife
- 1882 **Wallace, Hugh**, 30 Havelock Street, Glasgow
- 1886 **Wallace, James**, Pipehill, Ochiltree, Cumnock
- 1886 **Wallace, James R. W.**, Auchanbrack, Thornhill
- 1861 **Wallace, James, Drake**, St Andrews
- 1861 **Wallace, John**, Hailes, Haddington
- 1861 **Wallace, John**, late Illieston, Braeburn
- 1882 **Wallace, John**, of Glassengall, Dunblane
- 1882 **Wallace, John**, Stonelaw, Rutherglen
- 1857 **Wallace, John**, Glenkiln, Lamhass
- 1879 **Wallace, James**, Foundry, Castle-Douglas
- 1886 **Wallace, M. G.**, Terreglestown, Dumfries
- 1875 **Wallace, Robert**, Auchanbrack, Mauchline
- 1854 **Wallace, Robert A.**, Rhynd, Dunfermline
- 1882 **Wallace, Robert H.**, Rosa, N.W.P., India
- 1870 **Wallace, R.**, Langbarns, Kirkcudbright
- 1878 **Wallace, Prof. Robert**, University, Edinburgh—*Free Life Member*
- 1879 **Wallace, R.**, Foundry, Castle-Douglas
- 1885 **Wallace, Samuel W.**, Brunstane House, Joppa, Edinburgh
- 1880 **Wallace, Thomas Alex.**, Banker, Burntisland
- 1879 **Wallace, Wm. (John Wallace & Sons)**, Graham Square, Glasgow
- 1875 **Wallace, Wm.**, Kinneare, Leuchars
- 1871 **Wallace, Wm.**, Newton of Collessie, Ladybank
- 1885 **Wallace, Wm.**, Merchant, Lockerbie
- 1854 **Wallbank, Jonas**, Berwick-on-Tweed
- 1886 **Wallet, John**, Auction Mart, Castle-Douglas

Admitted

- 1882 Wilson, Thomas, Murrayshall Lime Works, Stirling
 1878 Wilson, Thomas Mackay, Solicitor, Kirriemuir
 1873 Wilson, William (Pickaley, Sims, & Co.), Leigh, Lancashire
 1858 Wilson, William, late Balquharn, Alford
 1879 Wilson, William, Water Meetings, Abington
 1878 Wilson, William, Butknowe, Sanquhar
 1881 Wilson, William, Bannockburn House, Bannockburn
 1885 Wilson, Wm., Coynachie, Gartly
 1873 Wilsone, Thomas, Solicitor, Aberdeen
 1877 Wingate, Andrew, Castlehill, Wishaw
 1883 Winton, Alex., Viewhill, Ardersier, Inverness
 1877 Wishart, D. F., 18 Picardy Place, Edinburgh
 1868 Wishart, W., Cairntradlyn, Blackburn, Aberdeen
 1878 Wither, James, Langanmore, Portpatrick
 1800 Woddrop, William Allan, of Garvald, Duffhinton
 1874 Wood, Christopher, Kintrockat House, Brechin
 1873 Wood, Collingwood Lindsay, of Freeland, Bridge of Earn
 1883 Wood, D., Blairmore Farm, Blairmore
 1885 Wood, James, Town Street, Aberdeen
 1864 Wool, James, Whitehill, Stitchell, Kelso
 1873 Wood, Walter A., 36 Worship Street, London, E.C.
 1877 Wool, Major William, Factor, Falkland
 1881 Woodroffe, D. (Allison Iron Works Co.), Chase View, Bugeley, Staffordshire
 1876 Wordsworth, R. W., Whitemoor House, Ullerton, Nottingham
 1878 Wotherspoon, Archibald (late Spotsmain, Kelso), West Oxford, Canterbury, New Zealand
 1877 Wragg, Charles, Grain Merchant, 4 Stockwell Street, Glasgow
 1887 Wright, Bryce, Dowhill, Girvan
 1850 Wright, David, Ravenswood, South Oswald Road, Edinburgh
 1885 Wright, Hugh, of Alticry, Port William
 1882 Wright, Robert P., Downan, Ballantrae — *Free Life Member*
 1877 Wright, Thomas, Bengal, Lockerbie
 1881 Wright, W. Burt, of Auchinvoile, Croy, Dumbartonshire
 1878 Wyatt, Sydney, Nydie Mains, St Andrews
 1885 Wyllie, N. M., Factor, Tonley, Whitehouse, Aberdeen
 1875 Wyllie, Alexander, W.S., 21 Castle Street, Edinburgh
 1884 Wyllie, Alex., Thurston Mains, Dunbar
 1870 Wyllie, Alexander, Bolton, Haddington
 1884 Wyllie, Alex., Holmhyre, Ardrossan
 1883 Wyllie, James, Factor, Inveraray
 1874 Wyllie, James, Innerwick, Dunbar
 1835 Wyllie, W. A., late 14 West End Park Street, Glasgow

Admitted

- 1878 Wyllie, Wm., Pleasance of Cargen, Dumfries
 1880 Wyse, G. B. M., 11 Northumberland Street, Edinburgh
 1868 Yeats, Alex., Advocate, Depute Town Clerk, Aberdeen
 1835 Yeats, William, of Aquharney, Beacons-hill, Aberdeen
 1864 Yool, Thomas, Calcots, Elgin
 1864 Yorstoun, M. C., of Tinwald, Irvine House, Canonbie
 1852 Young, Alex., Keir Mains, Dunblane
 1807 Young, Andrew, 4 Clarendon Place, Stirling
 1850 Young, Andrew, Localityside, Thornton, Kirkcaldy
 1851 Young, Arch., Advocate, 22 Royal Circus, Edinburgh
 1854 Young, Hon. Lord, 28 Moray Place, Edinburgh
 1877 Young, D. S., Bunnington, North Berwick
 1873 Young, Geo., Auctioneer, Dollar
 1884 Young, George Panlathy, Carnoustie
 1843 Young, Harry, of Glesk Castle, Kinross
 1836 Young, Jas., Broadholm, Duntocher
 1860 Young, J. A., Orchardtown, Gartleston
 1871 Young, James, Waterton, Elgin
 1875 Young, James, Cadboll, Pearn
 1863 Young, John, jun. (J. & T. Young), Ayr
 1876 Young, John, Larch Grove, Balerno
 1857 Young, John, 8 East Street, Rochdale
 1879 Young, John, Cobblebrae, Falkirk
 1863 Young, Matthew, Oilcake Mills, Berwick-on-Tweed
 1882 Young, Robert, Merchant, 24 St Vincent Crescent, Glasgow
 1853 Young, R. C., Netherfield, Paisley
 1879 Young, Robert W. (of Colinswell), Hetchley Hall, Hinchley, Leicestershire
 1873 Young, Wm., Taylorton, Stirling
 1878 Young, Wm., Burrageen, Sacomb, Ware, Herts
 1873 Young, Wm., Waterbank, Carmunnock
 1876 Young, William Stirling, Keir Mains, Dunblane
 1886 Young, William, Whitlaw, Bathgate
 1887 Young, William, Drum, Campbeltown
 1879 Younger, George, Brewer, Alton
 1887 Younger, George, 15 Carlton Terrace, Edinburgh
 1870 Younger, Henry J., Abbey Brewery, Edinburgh
 1875 Younger, J. B. B. C., North Callange, Cupar
 1863 Younger, Robert, 15 Carlton Terrace, Edinburgh
 1870 Yull, Archd., Netherside, Strathaven
 1809 Yule, Edward, Balgone, North Berwick
 1868 Yull, John S., Little Ardo, Methlick
 1877 ZETLAND, Right Hon. the Earl of, Kerse House, Falkirk

TOTAL NUMBER OF MEMBERS, 5020.

HONORARY MEMBERS.

HONORARY ASSOCIATES.

- 1874 Dahl, Ferdinand August, Ans, Christiania

- 1874 Holst, Christian, Norwegian Court Paymaster

LIST OF DIPLOMA FREE LIFE MEMBERS.

By a Bye-Law passed in 1873, with reference to the Supplementary Charter of 1856, successful Candidates for the Society's Agricultural Diploma are thereby eligible to be elected Free Life Members of the Society.

In 1882, the holders of the Diploma memorialised the Council, pointing out the want of some distinctive title attached to the Diploma, and praying that the title F.H.A.S. (Fellow of the Highland and Agricultural Society of Scotland) be granted to them. The Council acceded to the prayer of the Memorial.

Admitted	Admitted
1879 Aitken, John M., Ravenshill, Lockerbie	1873 Jukes, R. F., M.R.A.C., Harley, Much Wenlock
1853 Alexander, A. S., 216 Clark St., Chicago	1875 Kennedy, William, M.R.A.C., Lewes and County Club, Lewes, Sussex
1876 Anderson, R. Lang, Assam, India	1855 Lowrie, Wm., Clarilaw, St Boswells
1873 Ashdown, A. H., M.R.A.C., Castle House, Shrewsbury	1873 McConnell, Primrose, Ungar Park Farm, Ungar, Essex
1858 Bardgett, John, 26 Montgomery Street, Edinburgh	1875 McCracken, Prof. William, Royal Agricultural College, Cirencester
1853 Basu, Giris Chandra, 196 Bowbazar Street, Calcutta	1876 Macconchy, John Arthur, M.R.A.C., Kildare Street Club, Dublin
1854 Benson, R.A., 11 Caledonian Pl., Clifton	1855 Macdonald, A. C., Nether Lurgie, Lochmiphead
1885 Birch, Walter de Hoghton, Chew Manga, Somerset, Bristol	1859 McMinnies, Henry H., Faringham, Preston
1873 Bramwell, John, Blackaddie, Sanquhar	1854 Malcolm, John, M.R.C.V.S., Birmingham
1873 Brown, William, Earlsmill, Forres	1880 Martin, Wm., Dardarroch, Dumfries
1873 Browne, Culville, M.R.A.C., Park House, Long Melford, Suffolk	1873 Milne, John, Inverurie
1873 Brydon, Robert, The Dene, Seaham Harbour	1856 Muos, N. A. F., Poona, Bombay
1874 Burn, Finbes	1873 Munby, Edward Charles, M.R.A.C., Myton Grange, Helperry, Yorkshire
1852 Buttar, Thos. A., Corston, Coupar-Angus	1856 Mukerji, Nitya Gopal, Bhowanipur, Calcutta
1873 Campbell, George, Kilkea, Mageny, 'do Kildare	1875 Murdoch, George Burn, M.R.A.C., 2 Greenhill Bank, Morningside, Edinburgh
1885 Campbell, Robert J., Slagshaw, Castle-Douglas	1875 Murray, Robert W E., 18 Arden Place, Edinburgh
1879 Cannon, James, Urieoch, Castle-Douglas	1873 Nonnen, John Edward, Norway
1878 Carr, Robert, Felkington, Norham, Berwick-on-Tweed	1873 Norman, Wm., M.R.A.C., Hall Bank, Aspatia
1854 Clinton, W. E. Pelham, Moorcourt, Stroud	1882 Norrie, William, Cairnhill, Monquhitter, Turfiff
1879 Craig, John, Innergeldie, Comrie	1877 Pudney, R. L., M.R.A.C., Earl's Colne, Haleslead, Essex
1850 Craig, Wm., Gwydyr House, Criefff	1852 Reid, Peter, Port Ellen, Islay
1880 Dickson, Thos. A., Westcliff, Preston	1873 Reame, Thomas, M.R.A.C., Charlton House, Charlton Kings, Cheltenham
1873 Eley, Rev. Dr Wm. Henry, Etchingham Rectory, Hawkhurst, Kent	1881 Sandison, Marcus, Natal
1873 Elliot, Prof. Thomas John, M.R.A.C., Eastnor Ledbury	1875 Sharp, J. J., Ewingston, Gifford
1882 Emsw, Thomas Henry, 54 South Street, Dorchester	1882 Smith, E. Hedley, B.L., Whittinghame, Prestonkirk
1874 Er-kine, Henry, Buccleuch Square, Langholm	1873 Smith, William B., M.R.A.C., 32 Ashchurch Grove, London
1886 Falser, Alfred D., Belmont, Ilfracombe, Kent	1876 Sutherland, Alex., Ramppyards, Watten, Golspie
1876 Ferguson, Archd A., 21 Duddingston Park, Portobello	1883 Tiffen, J. H., 4 Grosvenor Terrace, Hull
1855 Gibb, Robert Sherra, Boon, Lauder	1873 Torry, Adam Ogilvie
1873 Giglioli, Italo, M.R.A.C., Portici	1873 Wall, G. Y., M.R.A.C., Durham
1873 Goddard, H. R., M.R.A.C., Belsay, Newcastle-on-Tyne	1875 Wallace, Prof. Robert, University, Edin.
1881 Gover, Lawford D., 6 Broadwater Road, Worthing	1873 Walton, George Kent, Long Campton, Shyuston-on-Stour, Warwickshire
1883 Hamilton, H.W., Uffington, Stamford	1883 Watson, H. A., T P. Manse, Forres
1854 Hardy, C. W. L., Gittesham, Honiton	1881 Weber, F. H., Sydenhurst, Godalming
1875 Henderson, John, Valley Farm, Kingsbury, Middlesex	1873 Wilson, Jacob, M.R.A.C., Chillingham Barns, Alnwick
1874 Henderson, Richard, The Grange, Kirkcudbright	1879 Wilson, John, Glibrea, Oakville, Ontario
1881 Henderson, W., East Elrington, Hexham	1852 Wright, Robert P., Downan, Ballantrae, Ayrshire
1873 Hill, Arthur James, M.R.A.C., Accountant, 30 Langslowne Road, London, W.	
1886 Hooper, Cecil H., Elmleigh, Beckenham, Kent	
1879 Hunt, A. E. Brooke, 10 Pall Mall, London	

APPENDIX (D).

LIST OF MEMBERS

THE HIGHLAND AND AGRICULTURAL
SOCIETY OF SCOTLAND

ARRANGED ACCORDING TO COUNTIES.

1887.

By a Resolution of the Directors, 2nd February 1887, the list of Members, arranged according to Counties, has been so made up that no Member shall vote in more than one Show District for the nomination of Directors. Members finding any mistakes are requested to report the same to Mr F. N. MENZIE, 3 George IV. Bridge, Edinburgh.

The following is the List of Counties constituting the Show Districts:—

1. **Glasgow**, for the Counties of Lanark, Ayr, Renfrew, Argyll, and Bute.
2. **Perth**, for the Eastern Division of Perthshire, the Counties of Fife and Kinross, and the Western Division of Forfarshire.
3. **Stirling**, for the Counties of Stirling, Dunbarton, and Clackmannan, and Western Division of Perthshire.
4. **Edinburgh**, for the Counties of Edinburgh, Haddington, and Linlithgow.
5. **Aberdeen**, for the Counties of Aberdeen, Banff and Kincardine, and Eastern Division of Forfarshire.
6. **Dumfries**, for the Counties of Dumfries, Kirkcubright, and Wigtown.
7. **Inverness**, for the Counties of Inverness, Elgin, Nairn, Ross, Cromarty, Caithness, Sutherland, and Orkney.
8. **Kelso**, for the Counties of Berwick, Roxburgh, Selkirk, and Peebles.

LIST OF MEMBERS

ARRANGED ACCORDING TO COUNTIES.

ABERDEEN.

HER MOST GRACIOUS MAJESTY THE QUEEN
HIS ROYAL HIGHNESS THE PRINCE OF WALES

ABERDEEN, The Earl of, Haddo House, Meth-
lick

Abernethy, David W., Ferryhill Foundry,
Aberdeen

Adam, Alexander, 20 Union Terrace, Aber-
deen

Adam, Thomas, National Bank, Aberdeen

Ainslie, Ainslie Douglas, of Delgaty Castle,
Turriff

Ainslie, Wm., Pitfour, Mintlaw

Alexander, George, South Balnoon, Huntly

ANDERSON, Sir Alexander, Aberdeen

Anderson, George, West Fingask, Old Mel-
drum

Anderson, John, Craiston, Banchory

Anderson, John, Mill of Wester Cuall, Tar-
land

Anderson, John M., Huntly

Anderson, Robert, Wester Coull, Tarland

Anderson, William, Wardes, Kintore

Anderson, Wm., Wellhouse, Alford

Angus, Samuel, Bonnymuir, Aberdeen

Arzo, James, Cairdseat, Uday

Bain, George, Old Mill Reformatory, Aber-
deen

Barclay, C. A., 'Aberdour House, Fraser-
burgh

Barclay, J. W., M.P., 60 Dee Street, Aberdeen

Barclay, Morrison, 60 Dee Street, Aberdeen

Barron, Gen. F., Melkie Endowie, Alford

Bean, Alex., Netherthirld, Bothienorman

Bean, George, Balquhain, Inverurie

Bean, James, Mains of Dumbreck, Uday

Bean, Wm., Newton, Cairnie, Huntly

Beaton, James, Monyruy, Longside

Beaton, John, Station Hotel, Inch

Bentlie, James A., C.E., Aberdeen

Beedie, James, The Mains, Ardlaw, Fraser-
burgh

Bell, John, Tyrie Mains, Fraserburgh

Benton, Joseph, Harthill, Whitehouse

Benton, William, Cattie, Whitehouse

Bluck, James, Barthol Chapel, Old Meldrum

Bothwell, Wm., Berryhill, Bridge of Don,
Aberdeen

Bowman, James, Square, Huntly

Brebuur, Alexander, Balquhindochy, Meth-
lick

Brown, Archibald, Craig, Uday

Brown, James H., Banker, Ellon

Brown, John, Craffie Cottage, Hardgate,
Aberdeen

Brown, Joseph, Little Endowie, Alford

Bruce, David C., Broadlands, Huntly

Bruce, George, Pennan Farm, Fraserburgh

Bruce, George, Heatherwick, Keith Hall

Bruce, G., 35 Market Street, Aberdeen

Bruce, James, Colliestie, Gartly

Bruce, James, Inverquhomery, Longside

Bruce, Peter, Myreton, Inch, Aberdeen

Burr, Alexander, Tulloford, Old Meldrum

Burr, John M., Netherton, Fyvie, Aberdeen

Campbell, Alex., Belmont, Aberdeen

Campbell, Silvester, Kinellar, Blackburn

Campbell, Silvester, jun., Toftfills, Aberdeen

Chalmers, W., Boutarton, Forgue, Huntly

Charles, John, Town and County Bank, In-
verurie

CLARK, Sir John F., of Tillypronie, Bart.,
Tarland

Clarke, William, Hopewell, Tarland

Cochrane, James, Waterside Lodge, New-
burgh

Collie, Wm., Priestwells, Inch

Cook, Charles, 17 Golden Square, Aberdeen

Copland, Alex., Commercial Co., Aberdeen

Cordiner, W. F., Mormond House, Cortes

Coupar, J. C., of Craigsbuckler, Aberdeen

Cowie, Alex., Darley, Auchterless, Turriff

Cowie, Alex., Crombly Bank, Ellon

Craig, David, New Aberdour, Aberdeen

Craig, William, Old Meldrum

Cran, George, Old Morlich, Inverkindie

Cran, James, jun., Knockandoch, Whitehouse

Croil, Thomas, Drumwhindie Mains, Ellon

Cruickshank, Amos, Sittytun, Aberdeen

Cruickshank, Andrew, 37 Gordon Street,
Huntly

Cruickshank, E. C., Lethenty, Inverurie

Cruickshank, G. A., Nether Cortes, Lomay

Cruickshank, J., Ladysford, Fraserburgh

Cruickshank, J. W., Kirk House, Summer-
hill

Cruickshank, Wm., Woodhead, Cairness

Dakera, James, 24 Union Row, Aberdeen

Dalrymple, C. E., of Kinellar Lodge, Black-
burn

Darling, D. C., 39 Union Street, Aberdeen

Dawson, W. F. G., North of Scotland Bank,
Inch

Dewar, Alex., Bethlin, Midmar

Dewar, J. R. C., V.S., Kintore

Donald, James, Whitemyres House, Old
skene Road, Aberdeen

Douglas, A. F., Haddo House Mains, Aber-
deen

Downie, C. G., 1 Adelphi, Aberdeen

Downie, Wm., Kinbroom, Bothienorman

Duff, Col. James, Knockleith, Turriff

Duff, G. A., of Hatton, Turriff
 Duguid, P., of Cammachmore, Aberdeen
 Dunbar, William, Union Bank, Turriff
 Duncan, Alex., Bridge of Dee, Aberdeen
 Duncan, John, Ardo, Methlick
 Duncan, John, Logie Durno, Pitcaple
 Duncan, John, Fortria, King Edward
 Duncan, Patrick, Balchery, King Edward
 Durno, James, Jackson, Rothlenorman
 Durno, John, Lambhill, Insch
 Durno, John, Sunnyside, Rothlenorman
 Durno, Leslie, Mains of Glack, Old Meldrum
 Durward, John, Luib, Corgarrif, Strathdon
 Duthie, William, Banker, Tarves
 Edmond, Alex., Garthdee, Aberdeen
 Ewen, Robert, West Town, Tarland
 Farquhar, Arthur, W. B. Cove, Aberdeen
 Farquhar, James, Old Echt, Echt
 Farquharson, Colonel James Ross, of Invercauld, Braemar
 Farquharson, J., 4 Bridge Street, Aberdeen
 Farquharson, James, East Town, Tarland
 Farquharson, R. O., of Houghton, Alford
 Ferguson, Lieut.-Col. George A., of Pitfour
 Ferguson, George A., Lessendrum, Drumblade
 Ferguson, Thomas, 46 Don Street, Old Aberdeen
 Ferguson, Wm. of Kinnmundy, Aberdeen
 Foggo, R. G., Invercauld Office, Ballater
 FORBES, Lord, Castle Forbes
 Forbes, J. O., of Corse, Lumphanan
 Forbes, James, Tombreck, Glenbucket
 FORBES, Lieut.-General, Sir John, of Inverman, K.C.B., Strathdon
 Forbes, John, Pitlachie, Coldstone
 Forbes, William, Ruthven, Dinnet
 Fowler, William, of Alesed, Turriff
 Fowle, James, Brucehill, New Deer
 France, C. S., 68 Leslie Terrace, Aberdeen
 Fraser, Colonel Fred. Mackenzie, of Castle Fraser, Aberdeen
 Fraser, George, Hill of Skillmaffly, Ellon
 Garden, James M., Advocate, Aberdeen
 Garden, Robert, North Ythsie, Tarves
 Garloch, Peter, 1 Skirling Street, Aberdeen
 Garvie, R. G. (Ben. Reid & Co.), Aberdeen
 Geddes, Alex., of Blairmore, Glass, Huntly
 Gibson, H. J., Fornety, Foveran
 Gordon, Alex., of Pitburg and Dyce, Parkhill House, Aberdeen
 Gordon, A. Hay, of Mayen, Huntly
 Gordon, A. M., of Newton, Insch
 Gordon, A. N. Forbes, of Rayne, Corse House, Lumphanan
 Gordon, C. P., of Wardhouse, Insch
 Gordon, Henry, of Manar, Inverurie
 Gordon, Henry G. Fellowes, of Knockespeck, Clatt
 Gordon, H. W., of Hallhead, Ellon
 Gordon, John, of Craigmyle, Torphins
 Gordon, William, Auchallater, Braemar
 GRANT, Sir Francis William, of Monymusk, Barts., Aberdeen
 Grant, John, Banker, Methlick
 Grant, Robert, of Drumminor, Rhynie
 Grassick, John, Aberdeen
 Halkett, Jas., Auchentender, Insch
 Hall, Alex. H., Campfield, Banchory
 Hamilton, George, of Skene, Aberdeen
 Harper, Hugh (Harper & Co.), Aberdeen
 Harvey, G. T., 83 Union Street, Aberdeen
 Harvey, J. H., Prigersie, Foveran, Ellon
 Hay, Alexander (Ben. Reid & Co.), Aberdeen
 Hay, Col. A. S. L., of Rannes, C.B., Kennethmont
 Hay, James, Jun., Little Ythsie, Tarves
 Hay, John, of Millmoss, Turriff
 Hector, A. B., 167 Crown Street, Aberdeen
 Henderson, Mrs John, 4 Granville Place, Aberdeen

Hepburn, James, Spital, Keithhall
 Hunter, Capt. A. C., of Tillery and Auchries, Aberdeen
 Hunter, Charles, Upper Mills of Drum, Crathes
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 Hutcheon, Alex., Nether Ordley, Auchterless, Turriff
 Hutcheon, Major John, Lower Cotburn, Turriff
 Hutcheon, John, of Upperton, Turriff
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 Innes, T. G. Rose, of Netherdale, Turriff
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 Ironside, William, Clonrickford, Ellon
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 Law, John, New Keig, Whitehouse
 Law, John, Lochend, Old Meldrum
 Lawson, Charles, Deebank, Cults
 Lawson, C., Ordhead, Cluny, Aberdeen
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 Ledingham, John, Slap, Turriff
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 Maitland, Robert, Balhagardy, Inverurie
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 Mitchell, Wm. A., Auchnagathel, Keig
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 Runciman, John, Auchmull, King Edward
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 Strachan, Lewis, Cluny of Rasmoir, Ban-
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 drummy
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 Campbell, C. G., of Stonefield, Tarbert
 Campbell, Admiral, of Barbreck, Lochgilp-
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 Craig, John, Glencruiffen, Oban
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 Dickie, Robt., Killeonan, Campbeltown
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 Duncan, R., Royal Hotel, Tigh-na-bruaich
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 Finlay, Kirkman, of Dunlossit, Islay
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 Kay, Robt., Tuna, Minard, Inveraray
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 Lang, William, Glengorm, Tobermory
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 Macarthur, John, Banker, Inveraray
 McCallum, Dun., Glenmachrie, Oban
 McCall, Duncan, Clachan, Lismore, Oban
 McCulloch, Allan, Kilbride, Glenfeochan, Oban
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 Macdiarmid, H., Three, Tobermory
 Macdiarmid, Robert, Castles, Lochawe
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 Macdonald, A. U., Nether Largie, Lochgilphead
 McDougall, Col. Chas. A., of Dunollie, Oban
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 Macfarlane, Lewis, Invermay, Lochgilphead
 McGibbon, David, Ardincraig, Campbeltown
 MacGregor, Donald, Solicitor, Oban
 MacIntyre, J., Lochvoil Cottage, Oban

Mackay, A. F., Carskey House, Campbeltown
 McKeand, P., Scour, Bunessan, Mull
 MacKechnie, Neil, Inveraray
 MacKechnie, Jas., Blarueen House, Taynult
 Mackellar, John, Crossaig, Tarbert
 Mackellar, Peter, Crossaig, Tarbert
 Mackenzie, John, of Knipoch, Oban
 McKerral, A., Brunerian, Campbeltown
 Mackinnon, Wm., of Loup, Balnaskill, Clachan, Kintyre
 McLachlan, D., Lochgilphead
 MacLachlan, John, of MacLachlan, Inveraray
 MacLaine, M. G., of Lochbuie, Oban
 McLachie, W., Ballygreggan, Campbeltown
 McLean, A. J., of Pennyross, Oban
 McLean, A. T., of Ardgour, Fort-William
 Maclean, Dr L., Columbia Cottage, Oban
 Macleod, John N., of Kintarbert, Glensaddell, Campbeltown
 McLellan, Keith, Melfort, Lochgilphead
 McMoran, R., Kinlochspelve, Lochbuie
 Macneal, H., of Ugadale, Campbeltown
 McNeill, Maj.-Gen. Sir J. C., of Colonsay, V. C., K.C.M.G., K.C.B.
 Mc Nicol, John, Garvie, Colintrave
 McNicol, John, Achandarroch, Ballachulish
 McPhail, John, Scalladale, Mull
 Macpherson, James, Maam, Inveraray
 Malcolm, William M., Auchnacraig House, Mull
 Masson, John, Tobermory
 Maxwell, Wm., Baraskomel, Campbeltown
 Mercer, John, Ardnadam, Sandbank
 Mitchell, Jas., Craigs, Campbeltown
 Mitchell, J., Ballemannach, Campbeltown
 Morrison, Charles, of Islay, Bridgend
 Munro, D. H. C., of Kenlochisch, Appin
 Nicol, James, Solicitor and Banker, Oban
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 Oliver, W. Elliot, Benhuy, Inveraray
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 ORDE, Sir John W. F. C., of Kilmorye, Barty
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 Ramsay, John, of Kildalton, Port Ellen
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 Reid, Peter, Port Ellen, Islay
 Robertson, Jas. J., Kinloch, Morvern, Oban
 Robertson, John, Craig Farm, Dalmally
 Shankland, Wm., Achnacraigh, Lismore
 Shaw, James T., Mungastell, Morvern
 Sim, John Fraser, Oban
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 Smith, T. V., of Ardnornish, Oban
 Smith, W. Anderson, Ledaig
 Sproat, George B., Writer, Tobermory
 Sproat, William, Procurator-Fiscal, Tobermory
 Stevenson, A. S., of Auch-na-cloich, Taynult
 Stewart, Rev. A. M., Inverchapple, Greenock
 Stewart, Com. D., R.N., Knockrich, Campbeltown
 Stewart, John Lorne, of Coll
 Stewart, Captain J. C., of Fannacloich, Ledaig
 Stewart, William, Tonreoch, Campbeltown
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 Whyte, John, Ballochyle, Sandbank
 Willison, D. C., Soccoth, Dalmally
 Wilson, Peter, Linsaid, Tigh-na-bruaich
 Wood, David, Blairmore Farm, Blairmore
 Wyllie, James, Factor, Inveraray
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 Alston, George, Loudoun Hill, Darvel
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 Campbell, R. F. F., of Craigie, M.P.
 Clark, William, Shawhill, Monkton
 Clelland, James, Ballgreen, Dalrymple
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 Houldsworth, J. M., Ayr
 Houldsworth, Wm., Mount Charles, Ayr
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 Sloan, Wm. Brieryside, Monkton
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 Somerville, William, Easter Halket, Dunlop
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 Wallace, Robert, Auchinbrain, Mauchline
 Wardrope, Robert, Garlaft, Cumnock
 Watson, John, Kilmarnock
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 Willison, George, Woodbank, Dalry
 Willison, Jas. F., of Cuitezeun, Maxwellton, Maybole
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 Cran, John, Butcher, Keith

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 Cumming, H. G., Pittyvaich, Dufftown
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 Morison, James O., jr. of Culvie, Aberchirder
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 Ogilvie, A. M., Tillynaught, Portsoy
 Paterson, Wm., Auldtown of Carnousie, Turrit
 Petrie, James, Banker, Dufftown
 Ramsay, Alex., *Banffshire Journal* Office, Banff
 Reid, Wm. T., of Ardmellie
 RICHMOND and GORDON, The Duke of, K. G., Gordon Castle, Fochabers
 Robertson, Wm., Aberlour Mains, Craigellachie
 Robertson, William, Port Gordon, Fochabers
 Rust, James, Paddocklaw, Banff
 Shand, Geo., Ordens, Boyndie, Banff
 Shand, R. S. Kynoch, of Hillside, Keith
 Simpson, Alexander, Duff House, Banff
 Simpson, J. (Auchinachie & Simpson), Keith
 Skinner, Wm. M., Drumin, Ballindalloch
 Smith, Alexander, Inchcoarse, Rothiemay
 Smith, J. Gordon, Minmore, Ballindalloch
 Smith, J., Mullochard, Ballindalloch
 Stephen, James, Black Culphin, Banff
 Steuart, And., of Auchlunkart, Keith
 Stuart, C., Tomindugle, Knockando, Craigellachie
 Turner, R., Auchnarrow, Ballindalloch
 Turner, Robert, Cairnton of Boyndie, Portsoy
 Walker, Francis, Craignetherty, Turrit
 Ward, James, Forester, Keith
 Watt, Geo. Neish, Gellyhill, Banff
 Williamson, Robert, Netherwood, Banff
 Wilson, James, Inchgower, Fochabers

BERWICK.

Allan, John, Peelwalls, Ayton
 Allan, John, Redheugh, Cockburnspath
 Allan, Robert A., Allan Bank, Eyemouth
 Bertram, John, Addinston, Lauder
 Bertram, John S., Cranshaw, Duns
 Bird, James B., Flahwick, Paxton
 Black, George, Sea-View Works, Berwick
 Bolam, Robert George, Berwick-on-Tweed
 BOSWALL, Sir G. Houstoun, of Blackadder Bart., Chirnside
 Bowhill, James, Banker, Ayton
 Brigham, J., Implement Works, Berwick
 Bromfield, W. J., Old Greenlaw, Greenlaw
 Broomfield, Thomas, Lauder
 Broughton, R. H., of Rowchester, Greenlaw
 Brownlie, Alex., Haughhead, Earliston
 Brydon, Thos. T., Burncastle, Lauder
 Calder, R., Little Swinton, Coldstream
 Calder, T. A., Billie Mains, Reston
 Calder, W. A., Oxenrig, Coldstream
 CAMPBELL, Sir H. Hume, of Marchmont, Bart., Duns
 Carmichael, John, Bellevue, Coldstream
 Chirnside, G., Edrington House, Berwick
 Cossar, Mark, Greenknowe, Duns
 Cowe, Peter, Lochton, Coldstream
 Cowe, Robert, Old Castles, Chirnside
 Cowe, Wm., Butterdean, Grant's House
 Cranston, Robert, Pathhead, Cockburnspath
 Craw, H. H., West Foulden, Berwick
 Craw, James, Whitesome Hill, Chirnside
 Crawford, Alex., Writer, Duns
 Darling, Adam, Governor's House, Berwick
 Darling, Thomas, 1 Palace Street East, Berwick
 Deas, Adam, Briery Bank, Duns
 Dickenson, Robert, Longcroft, Lauder
 Dickenson, Wm., Longcroft, Lauder
 Dodds, William, Elwardlaw, Greenlaw
 Dunn, James, Blainslie, Lauder
 Elder, Thos., Wedderburn Mains, Edrom
 Elder, W., Implement Works, Berwick-on-Tweed
 Elliot, Walter, Whitlaw, Lauder
 Elliot, William, Elmford, Duns
 Ferguson, J., Duns Castle Estate Office, Duns
 Fulton, John, Hatchednize, Coldstream
 Gibb, Robert Shirra, Boon, Lauder
 Gibson, J., Gunsgreen Hill, Ayton
 Gilroy, James, Berwick-on-Tweed
 HAMILTON, Hon. R. B., Langton, Duns
 Henderson, Robert, East Gordon, Gordon
 Herbertson, Robert H., Fane, Earliston
 Herriot, David, Whitelaw, Edrom
 Hogg, Thomas, Hope Park, Coldstream
 HOME, The Earl of, The Hirsell, Coldstream
 Home, David Milne, of Milne Graden, Coldstream
 Home, Col. D. Milne, of Wedderburn, Paxton House, Berwick
 Hood, James, Cove, Cockburnspath
 Hood, John, Townhead, Cockburnspath
 Hood, T., Coldstream Mains, Coldstream
 Hood, Thos., Factor, Coldstream
 Hood, W., The Cove, Cockburnspath
 Hope, A. Peterkin, Sunwick, Berwick
 Hope, Capt. Charles, of Cowdenknowes, Earliston
 Hunter, James, of Antonhill, Coldstream
 Johnston, James, Huntingdon, Lauder
 Kynoch, Dr Patrick, Greenlaw
 Lawrie, John H., Hardens, Duns
 Lithgow, E., Bedshiel, Greenlaw, Duns
 Lockie, William, West Morrison, Earliston
 Logan, Adam S., Ferney Castle, Reston

Logan, J. W., Brow of the Hill, Berwick
 Loney, Peter, Marchmont, Duns
 Lyal, William, Fogorrig, Duns
 Macbraire, J., of Broadmeadows, Berwick
 McDougal, George, Blythe, Lander
 McLean, David, Estate Office, The Crooks,
 Coldstream
 Mack, Joseph, Berrybank, Reston
 Melrose, Jonathan, Coldstream
 Menzies, John, Bankhead, Duns
 Middleton, Hilton, Kimmerghame Mains,
 Duns
 Mill, Allan, Dods, Lander
 MILLER, Sir W., of Manderston, Bart., Duns
 Mulrhead, Geo., Paxton, Berwick
 Nisbet, George, Rumbleton, Greenlaw
 Nisbet, Jas., of Lambden, Greenlaw
 Paterson, James, Kidshielaugh, Duns
 Porteous, James, Solicitor, Coldstream
 Pyhlon, Karl, Gregor Arthur, Camp Hill,
 Berwick-on-Tweed
 Rae, Robt., Burnbank, Foulden, Berwick
 REAY, Lord, Carolside, Earliston
 Renwick, G. J., Corsbie, Earliston
 Romanes, Robert, of Harryburn, Lander
 Rutherford, A., Rumbleton Law, Gordon
 Rutherford, G., Erintonan, Coldstream
 Scott, Peter, Whiting, Ayton
 Shaw, James, Skithmuir, Coldstream
 Shiel, Andrew, Coldstream
 Shillinglaw, Wm., Simprim, Coldstream
 Simson, George, Courthill, Kelso
 SINCLAIR, Lord
 Smith, Alex., Letham, Berwick
 Smith, F. C., Hoprig, Cockburnspath
 Smith, J. F., Fireburn Mill, Coldstream
 Somervail, J. A., Hawkshaw, Coldstream
 Stephenson, Richard, Chapel, Duns
 Swan, Robert G., Duns
 Swinton, A. Campbell, of Kimmerghame
 Swinton, Alan, Swinton House, Cold-
 stream
 Swinton, J. L. Campbell, yr. of Kimmerghame
 Tait, G., Milnegraden Mains, Coldstream
 Thomson, James, Mungoswells, Duns
 Torrance, George, Sisterpath, Duns
 Torrance, T., Laws, Whitsoame
 Turnbull, Alex., Swinton Mill Farm, Cold-
 stream
 Tweedie, David, Nether Howden, Lander
 Watson, W. H., Ruthven, Coldstream
 Weatherhead, Wm., Bogangreen, Colding-
 ham
 Weddell, John, Wilkie, Lander Barns,
 Lander
 Welsh, Alexander, Seedsman, Coldstream
 White, A., Kelloe Mains, Edrom
 White, E. C., Ayton Law, Ayton
 White, Wm., Lennel Hill, Coldstream
 Wight, R. B., Ecclaw, Cockburnspath
 Wilson, John, Wellnag, Duns
 Wilson, J., Chapelhill, Cockburnspath
 Wilson, Philip, Corn Factor, Duns
 Young, Matthew, Berwick

Macdonald, P., The Douglas Hotel, Brodick
 McIntyre, Daniel, Dunalut, Rothesay
 McIntyre, Wm., Mount Stuart, Rothesay
 Mackay, Arch. M., Bruchag, Rothesay
 McPherson, Donald, Queen's Hotel, Rothe-
 say
 Maddever, Dr J. C., 19 Battery Place, Rothe-
 say
 Murray, Patrick, Strabane, Brodick
 Robertson, Robert, Breakough, Millport
 Stuart, J. Windsor, Rothesay
 Tod, James, Glenkill, Lamash
 Tod, William, Glenree, Lamash
 Wallace, John, Glenkill, Lamash

CAITHNESS.

Adam, Thomas, of Lynegar, Wick
 Brims, James, Thurso
 Brock, John, Aukhorne, Wick
 Brown, George, Watten Mains, Watten
 Dunbar, Garden Duff, of Hempriggs
 Gill, John, Clyth Mains, Wick
 Gunn, Alexander, Dale, Halkirk, Thurso
 Gunn, James, Sibster, Wick
 Henderson, Alexander, of Stemster, Thurso
 Henderson, David F., yr. of Stemster,
 Thurso
 Henderson, A. W., of Bilbster, Wick
 Henderson, Captain J. H., Rosebank,
 Wick
 Horne, Edward Wm., of Stirkoke
 Keith, Peter, Factor, Barogill Castle,
 Wick
 Laing, William, Skail, Thurso
 McBeath, James, Brims, Thurso
 McCallum, John, Duncan St., Thurso
 Mackay, Wm., Melness, Princes St., Thurso
 Miller, John, of Scrabster, Thurso
 Muckhart, James, Berriedale, Dunbeath
 Paterson, Wm. Innes, Armadale, Thurso
 PORTLAND, The Duke of, Langwell, Wick
 Purves, James, Barrogill Mains, Wick
 Purves, Thomas, Rhiail, Bettyhill, Thurso
 Purves, William, Thurdistoft, Thurso
 Robertson, Robert, Wick
 Scott, A. E., Noss, Wick
 Sinclair, Clarence G., Thurso Castle,
 Thurso
 SINCLAIR, Sir J. G. T., of Ulbster, Bart.,
 Thurso Castle, Thurso
 SINCLAIR, Sir John R. G., of Dunbeath,
 Bart., Barrock House, Wick
 SINCLAIR, Sir Robert C., of Stevenson, Bart.,
 Achvarsdale Lodge, Reay, Thurso
 Sinclair, W. S. Thomson, of Freswick, Dun-
 beath Castle
 Smith, James, of Orlig, Thurso
 Sutherland, Alex., Rampyards, Watten
 Sutherland, George, of Forse, Wick
 Tait, Wm. Reid, Mina Villa, Thurso
 Traill, James Christie, of Battr, Thurso
 Waters, George S., Tistermains, Halkirk Road

CLACKMANNAN.

Adam, John, Harvieston Cottage, Dollar
 Alexander, James, Inch of Ferryton, Clack-
 mannan
 Allan, William, Park, Clackmannan
 Arch, paid, Francis, Blackfalds, Alloa
 Arro, Archd. T., Mill Grove, Alloa
 BALF, yr. of Bursleigh, Lord, Kennet, Alloa
 Christie, John, of Cowden, Dollar
 Conn, J. Wm., Solisgirth, Dollar
 Crawford, John, High Street, Alloa
 Dew, J. James, Balhiesk, Dollar
 Dry, ale, David, Lorna Hill, Alloa
 Fer, James A., Hilton, Alloa

BUTE.

Allan, James, Clauchlands, Lamash
 Allan, James, jun., Balnacole, Brodick
 Barr, William, Kerrylamont, Rothesay
 BUTE, The Marquis of, K.T., Mount Stuart
 Rothesay
 Chisholm, John, Wimbleton Cottage, Rothe-
 say
 Courrie, Alex., Albany Terrace, Rothesay
 Duncan, James, Bannatyne Mains, Rothe-
 say
 HAMILTON and BRANDON, The Duke of,
 K.T., Brodick Castle, Arran

Fisher, Donald, Jelfyholm, Alloa
 Galashan, Charles C., Saddler, Alloa
 Gibson, Thomas, Sheriflyards, Clackmannan
 Haig, J. R., of Blairhill, Dollar
 Haig, Robert, Dollarfield, Dollar
 Haig, W. J., of Dollarfield, Dollar
 Halley, George, Alloa
 Henderson, Robert, Nether Carsbridge, Alloa
 Kinross, John, Hillend House, Clackmannan
 Knox, Robert, Woodside, Cambus, Alloa
 Lee, John, Elm Bank, Dollar
 M'Laren, J. T., Kennet, Alloa
 Macnab, Alex., of Middleton Kerse, Menstrie
 Macnab, James, Glenochil House, Menstrie
 Macnab, John, Glenochil House, Menstrie
 McQueen, James, Divers Wells, Alloa
 MAR and KELLY, The Earl of
 Mitchell, Alex., Tilliecultray House, Tilliecultray
 Mitchell, Andrew, Alloa
 Moir, James M'Arthur, of Hillfoot, Dollar
 Moubray, John James, of Naemoor, Dollar
 Orr, James, of Harvieston, Dollar
 Robertson, Rev. A. Irvine, Clackmannan
 Robertson, Alex., Schaw Park, Alloa
 Simpson, James, Tower, Alloa
 Smeaton, Rev. John, Tullyallan Manse, Alloa
 Thomson, Thomas, Bankhead, Alloa
 Wilkie, David, Castle Campbell Hotel, Dollar
 Young, George, Auctioneer, Dollar
 Younger, George, Brewer, Alloa

DUMBARTON.

Anderson, John, Dullatur, Cumbernauld
 Anderson, John, Merkins, Alexandria
 Begg, Robert, Blarnie, Luss
 Black, James, of Auchentoshan, Duntocher
 Breingan, A., Merchant, Helensburgh
 Brown, A. J. Dennistoun, of Balloch, Alexandria
 Buchanan, Alexander, Norwood, Milngavie
 Buchanan, David, Garscadden Mains, New Kilpatrick
 BUCHANAN, Sir Geo. H. Leith, of Ross, Bart. Alexandria
 Burns, J. W., of Kilmahew, Cardross
 Calder, James, Colgrain, Cardross
 Campbell, J., of Tilliechewan, Alexandria
 Colquhoun, George, Shemore, Luss
 COLQUHOUN, Sir James, of Luss, Bart., Luss
 Cullen, William, Barbegs, Croy
 Dalrymple, James, of Woodhead, Kirkintilloch
 Douglas, Archd. C., of Mains, Milngavie
 Duncan, James, jr. of Auchendavie, Kirkintilloch
 Duncan, John, Auchentree, Croy
 Duncan, Thomas, Dullatur, Cumbernauld
 Ewing, Alexander Crum, of Keppoch, Cardross
 Ewing, Humphrey Ewing Crum, of Strathleven, Ardencaple Castle, Helensburgh
 Ferguson, John, Kipperoch, Dumbarton
 Findlay, R. E., of Bofurich, Alexandria
 Galbraith, John, Edentaggart, Luss
 Gardner, James, of Meiklehill, Kirkintilloch
 Gells, J. E., of Dumbuck
 Gilmour, John, of Mount Vernon, Row
 Gilmour, William E., Woodbank, Alexandria
 Glen, James (late of Rosebank), Helensburgh

Graham, George, jun., Easter Board, Gartshore, Croy
 Gray, John, Merchant, Helensburgh
 Jardine, Andrew, Ballemenoch, Helensburgh
 Kirkwood, Allan, Killermont, Maryhill
 Lennox, James, Shantron, Luss
 Lumsden, James, of Arden, Alexandria
 M'Auslan, Peter, Letrault, Row
 Macdonald, John, Belmore, Gareloch, Helensburgh
 M'Farlan, John, Faslane, Garelochhead
 M'Farlane, Colin, Strone, Glenfruin, Garelochhead
 M'Farlane, Duncan, Greenfield, Garelochhead
 M'Indoe, James, Glenmolachan, Luss
 Mackenzie, John, Duchlague, Cove
 Mackenzie, Robert D., of Caldervan, Alexandria
 Mackinlay, William, Ardoch, Cardross
 MacIsachlan, Colin, Woodend, Helensburgh
 M'Murich, James, Stuckievillech, Arrochar
 M'Nab, Donald, Duchlague, Luss
 M'Nab, Robert, Luss Hotel, Lochlomond
 M'Nair, Robert, Westertown, New Kilpatrick
 Macpherson, A. H., Tarbert Hotel, Loch Lomond
 M'William, John, jun., Invergoin, Arrochar
 Martin, John M., of Auchendennan, Alexandria
 Millar, James, Firkin, Arrochar
 Milne, J., Union Bank of Scotland, Helensburgh
 Murray, David, Moore Park, Cardross
 Niven, Richard, Dalnottar, Old Kilpatrick
 Park, Alex., Gartshore, Croy, Glasgow
 Paterson, Walter, Mount Blaw, Dalmaur
 Rankin, Robert, Inchtart, Kirkintilloch
 Renwick, Robert, Dalmaur Farm, Dalmaur
 Robertson, R. W., Rockingham, Kilcreggan
 Scott, Wm., Condurat, Airdrie
 Sharp, James, Helensburgh
 Simpson, John, Drumfreck, Helensburgh
 Smollett, P. B., of Bonhill, Cameron House, Alexandria
 Taylor, M., Letter Farm, Cove
 Whitelaw, Alex., of Gartshore, Croy
 Wilson, James, Luss Estates Office, Helensburgh
 Wright W. Burt, of Auchinvoile, Croy
 Young, James, Broadholm, Duntocher

DUMFRIES.

Aitken, John M., Ravenshill, Lockerbie
 Allan, Wm., Canonhill, Thornhill
 Anderson, George, of Woodhouse, Ecclefechan
 Armstrong, John N., Acrehead, Dumfries
 Arundel, W. F. Hunter, of Barjarg, Auld-girth
 Austin, James C., The Gill, Annan
 Austin, James J. M., of Dalmakerran, Tynron
 Austin, William, Bank Agent, Thornhill
 Baird, John, Hall, Kirkcubbin, Sanquhar
 Baird, John, Solicitor, Lockerbie
 Baird, Thomas, Courance, Lockerbie
 Beattie, James, Newbie House, Annan
 Beattie, John, Bulmansknowe, Canonbie
 Beattie, Simon, Annan
 Beattie, William J. P., Newbie, Annan
 Bell, Alexander, Stobhill, Lockerbie
 Bell, George, Almca, Lockerbie
 Bell, William, Todholes, Annan
 Boothby, R. C., Heatherly Haugh, Moffat
 Borland, John, Auchencairn, Closeburn, Thornhill

- Borland, Wilham, Townfoot, Closeburn, Thornhill
 Borthwick, Alexander Hay, Langholm
 Borthwick, J J M, Billholm, Langholm
 Borthwick, Thomas C, Langholm
 Bramwell, John, Blackaddie, Sanquhar
 Broatch, George, Thwaite, Ruthwell
 Brodie, Wm, of Bush, Barkerland, Dumfries
 Brook, Edward, Hoddam Castle, Ecclefechan
 Brown, David, Mellersh, Kirkmahoe
 Brown, James, Hardgrave, Ruthwell
 Brown, James, Burnside, Holywood, Dumfries
 Brown, John C, Between the Waters, Ecclefechan
 Brown, Thomas, Guillyhill, Holywood, Dumfries
 Brown, T M, Closeburn Castle, Thornhill
 Brown, Wm, Catterton, Lockerbie
 Brydon, H, Kinnelhead, Moffat
 Brydon, James, Kinnelhead, Moffat
 Carlyle, T J, of Templehill, Waterbeck, Ecclefechan
 Carmont, James, British Linen Company Bank, Dumfries
 Carruthers, John, of Miln, Kirkhill, Moffat
 Carruthers, John, Fundersyth, Lockerbie
 Carruthers, Joseph, Annan Bank, Moffat
 Carruthers, Joseph, Banker, Sanquhar
 Carruthers, R B, Huntingdon Lodge, Dumfries
 Caven, Thos, Burshaw, Glencorn, Dunrobin
 Charlton, John, Corn Merchant, Dumfries
 Chyrtal, Wm, Gilchristland, Thornhill
 Church, J, Parkhouse, Canonbie
 Common, James, Waterbeck, Ecclefechan
 Common, John, Bridgenew, Lockerbie
 Connell, J W F, of Auchencroche, Thornhill
 Cormack, John F, Solicitor, Lockerbie
 Crabbe, John, of Duncoo, Dumfries
 Craig, Alexander, Hunter's Lodge, Thornhill
 Craig, Daniel, Bari, Sanquhar
 Craig, Wm, Laurel Bank, Dumfries
 Cranston, James, Holeside, Thornhill
 Crawford, James, Rydenk Mains, Annan
 Crutchley, J A, Capleton Tower, Annan
 Dalziel, Adam, Chanlockfoot, Penpont
 Dalziel, Alex, Glenwhirrie, Sanquhar
 Dalziel, George, Auchencroche, Sanquhar
 Dalziel, James, Dalpiddie, Sanquhar
 Dalziel, Robert, Bruidhill, Penpont
 Dickson, George, Bruidhill Collin, Dumfries
 Dickson, John H, Dobson, Thornhill
 Dickson, E A, Merchiston, Dumfries
 Dickson, T, Drumcruick, Thornhill
 Dobie, Alexander, Kirkhill, Annan
 Dobie, David, Banker, Lockerbie
 Dobie, Douglas, Drumcruick, Thornhill
 Donald, Archibald, Auchencroche, Thornhill
 Donaldson, Rev John, Kirkcubbin, Manse, Sanquhar
 Douglas, A H, Johnstone of Lockerbie, Corngowan Castle, Ruthwell
 Dudgeon, R F, Woodhouselee, Canonbie
 Edmondston, James H, of Raddingwood, Annfield, Dumfries
 Erskine, Henry, Buccleuch Square, Langholm
 Farish, James, West Mains, Dumfries
 Farish, Samuel, Kirkland, Lockerbie
 Farish, Samuel T, Kirkland, Lockerbie
 Farish, Wm E, Tinwald Park, Dumfries
 Ferguson, John, Seed Merchant, Sanquhar
 Fergusson, Ninian, Sanquhar
 Fergusson, William, Donkies, Ecclefechan
 Fleming, Gavin, Crowdie Knowe, Ecclefechan
 Gillespie, Denholm, 6 Marchbank Terrace, Dumfries
 Gillespie, Rev John, Monswald Manse, Ruthwell, R S O
 Gordon, Henry, Sheriff Clerk, Dumfries
 Graham, Major General John Gordon, of Wyseby, Ecclefechan
 Graham, John of Shaw, Lockerbie
 Gray, Alex, Tanlawhill, Langholm
 Grierson, Sir A D, of La, Dumfries
 Grieve, Archd, Allnerigg, Canonbie
 Hamming, J J, Chappelroft Lochmaben
 Halliday, Andrew, Duns-erhill, Thornhill
 Henderson, James, Kelloidie, Sanquhar
 Henderson, John, Solicitor, Dumfries
 Hewetson, J, Auchencroche, Thornhill
 Hiddleston, John, Kilroy, Dunrobin
 Howat, John, Lower Netherwood, Dumfries
 Hunter, James, Lochside, Lockerbie
 Hutchison, Jas, Kirkhill, Dalton, Lockerbie
 Hutchison, John, Osgang, Tothowald
 Hyslop, Wm, Clerries, Sanquhar
 Irvine, B, Dumfries
 Irving, D T, Bell, of Whitehill, Lockerbie
 Irving, J, Bell, of Whitehill, Lockerbie
 Irving, H C, of Burnfoot, Ecclefechan
 Irving, Samuel, Cusco, Kirkcubbin
 Jameson, John, Whitehill, Lockerbie
 JARDINE, Sir Alex, of Applegirth, Bait, Lockerbie
 Jardine, James of Lariston, Lockerbie
 JARDINE, Sir Robert of Castlemilk, Bait, M P, Lockerbie
 Johnston, Lt Gen, of Curisall, Dumfries
 Johnston, James, Gauloch, Dumfries
 Johnston, Thomas, Moffat
 Johnston, Walter, Polmont, Moffat
 Johnston, William, of Cowhill, Dumfries
 Johnstone, Andrew J, of Halleath, Broadholm, Lockerbie
 Johnstone, James, Banker, Dumfries
 Johnstone, James, Hunterbeck, Moffat
 Johnstone, John A, Lochbank, Moffat
 Johnstone, J J Hope, of Annandale, Rae Hills, Lockerbie
 Johnstone, Miss Hope, of Annandale, Marchbank Wood, Moffat
 Johnstone, Michael, Auchbank, Moffat
 Johnstone, Robert, Polmont, Moffat
 Johnstone, Walter, Alton, Moffat
 Kennedy, David, Cistlehill, Dumfries
 Kennedy, James, of Sandrywell, Burnfoot, Sanquhar
 Kennedy, Wm, Kirkland, Sanquhar
 Kennedy, Wm, Dumfries, Thornhill
 Kerr, Adam, Castlehill, Dumfries
 Kerr, Archd, Upper Drumton, Lockerbie
 Kerr, John, Eltonfield, Ruthwell, R S O
 Kerr, Thomas, Whitehill, Sanquhar
 Kirkpatrick, David, Innes, Tothowald
 Kirkpatrick, James, L. Hill, Tothowald
 Kirkpatrick, James, Auctioneer, Annan
 Kirkpatrick, Samuel, West Kinnaird, Dumfries
 Lawrie, John P, Shieldhill, Lochmaben
 Leggat, Alex, Kilbyloch, Dunrobin
 Lennox, David, Merchant, Dumfries
 Levy, W, M. of Dunrobin, Dumfries
 Lindsay, James, Whitecastle, Lockerbie
 Little, James, Oak Tower, Canonbie
 Little, James, Church, Burnfoot, Langholm
 Little, John, Melcolm, Carlehill, Langholm
 Lockhart, Peter, Springhill Estate Office, Ecclefechan
 Lomax, William, Ragg, Sanquhar
 Lusk, Andrew, Lochvale, Dumfries
 Lyon, Thomas A, Whitecroft, Lockerbie
 MacCall, Alexander, Rock Hall Mains, Cullin, Dumfries
 MacCall, George, Burnside, Lockerbie
 MacCall, James, of Cuthoch, Monro
 MacClure, Wm, Banker, Lockerbie
 MacConnel, Frederick, of Blackjet, Annan
 MacCowan, A, of Newton, Holywood

M'Cowan, George, Glenmanno, Penpont, Thornhill
 Macdonald, Alexander, Grain Merchant, Lockerbie
 Macfarlan, George, Closeburn Mains, Thornhill
 M'Gibbon, James R., Union Bank, Moffat
 M'Gill, James, Banker, Dumfries
 M'Intosh, A. J., V.S., Dumfries
 Mackay, D., Hurkledale, Cummertrees, Annan
 Mackenzie, John A., Solicitor, Lockerbie
 Mackie, John, Sarksfields, Ecclefechan
 M'Kinnel, J. B. A., Iron Works, Dumfries
 M'Lean, James, Auctioneer, Annan
 M'Millan, John, of Glencrosh, Montalve
 M'Nae, Robert, V.S., Dumfries
 M'Tier, John, of Ladyfield, Dumfries
 M'Turk, Alex., Commercial Hotel, Sanquhar
 Malcolm, W. E., of Burnfoot, Langholm
 Marshall, William, Morton Mains, Thornhill
 Martin, Thomas, Muirhill, Thornhill
 Martin, William, Dardarroch, Dumfries
 Mathieson, Daniel, Banker, Lockerbie
 MAXWELL, Sir John R. Heron, of Springhill, Bart., Ecclefechan
 Maxwell, Francis, of Gribton, Dumfries
 Maxwell, George, of Broomholm, Langholm
 Maxwell, Joseph, Seedsmen, Thornhill
 Maxwell, Maxwell Hyslop, of the Grove, Dumfries
 Maxwell, General Harley, of Portrack, Dumfries
 Miller, Wm., Lakehead, Closeburn, Thornhill
 Milligan, James, Hayfield, Thornhill
 Milligan, John, Auldgrith, Dumfries
 Milne, Thomas, Grain Merchant, Lockerbie
 Minto, John D., Dumfries
 Mitchell, John, Boreland, Hutton, Lockerbie
 Mitchell, Joseph, Bankhead, Dalswinton, Dumfries
 Mitchell, Joseph M., Burnscarth Green, Dumfries
 Moffat, James, Gateside, Sanquhar
 Moffat, Thomas, Drumbule, Sanquhar
 Moffat, Wm., Garwald, Langholm
 Monlawa, Rev. James J., Middlebie Manse, Ecclefechan
 Murray, Allan, Castlemilk Mill, Lockerbie
 Newbigging, Thos. Kennedy, Nurseryman, Dumfries
 Paterson, David J., Watch Hall, Annan
 Paterson, John, Howdench, Moffat
 Paterson, John S., Craigdarroch, Sanquhar
 Paterson, J. Jardine, of Balgray, Lockerbie
 Paterson, J. W. J., Terrona, Langholm
 Paterson, Robert, of Robgill Tower, Ecclefechan
 Paterson, Robert B., V.S., Irving Street, Dumfries
 Paterson, William, of Brocklehurst, Mouswald, Ruthwell
 Paterson, Wm., Craigdarroch, Sanquhar
 Paterson, William, Rock Hall, Dumfries
 Payne, James, 23 Buccleuch Street, Dumfries
 Primrose, John, Solicitor, Dumfries
 QUEENSBERRY, The Marquis of, Kinmount, Annan
 Rae, Wm., Gateslack, Thornhill
 Rae, Wm., junr., Gateslack, Thornhill
 Rain, Rev. Thos., Hutton Manse, Lockerbie
 Ranken, John S., Lawesknowe, Moffat
 Rennie, D. W., of Conneath, Dumfries
 Reid, J., Corsebank, Sanquhar
 Rennie, James, Brewer, Dumfries
 Richardson, John, Braehead, Heck, Lockerbie

Richardson, Robert A., Sarkfoot, Gretna
 Richardson, William, Flossend, Gretna
 Richardson, Wm., Cotland, Dumfries
 Robertson, John S., Springkell, Ecclefechan
 Roddick, Frank, Trailtrow, Ecclefechan
 Scott, Robert A., Dormont Grange, Lockerbie
 Scott, Wm., Cullivait, Dumfries
 Semple, Wm., Mouswald Banks, Ruthwell
 Sloan, James, Coachbuilder, Dumfries
 Sloan, Hugh, Gillenbie, Lockerbie
 Smith, Edward, Nunholm, Dumfries
 Smith, James T., Bruce Villa, Lochmaben
 Smith, Robert, Dalibbie, Dumfries
 Smith, Thomas K., Penfllan House, Auldgrith
 Smith, William, Banker, Montalve
 Stenart, Patrick, Middlegill, Moffat
 Stewart, D., Unthank, Langholm
 Stewart, Peter, Dornock Mains, Annan
 Stobo, Andrew, Porterstown, Auldgrith
 Stobo, James, Halliday Hill, Auldgrith
 Stobo, Robert, Halliday Hill, Auldgrith
 Struthers, Wm., Logan Mains, Canonbie
 Symons, John, Solicitor, Dumfries
 Taylor, Joseph, Potholm, Langholm
 Thompson, Alex., Ironmonger, Dumfries
 Thomson, J. S., Brae, Dumfries
 Thomson, Robert, of Brae, Dumfries
 Thomson, Wm., M'Cheynston, Auldgrith
 Todd, Alex., Mouswald Grange, Ruthwell
 Todd, John, Tinwald Shaws, Dumfries
 Turnbull, Thos., Castlebank Mills, Dumfries
 Villiers, F. K., Closeburn Hall, Thornhill
 Walker, Lieut.-Col. Geo. C., of Crawfordton, Thornhill
 Wallace, James, R. W., Auchinbrack, Thornhill
 Wallace, William, Merchant, Lockerbie
 Warwick, W., Arkinholm Terrace, Langholm
 Waugh, John, Granton, Moffat
 Waugh, John, Castlehill, Lochmaben
 Whitelaw, James W., Solicitor, Dumfries
 Whittle, John, Gubbill, Closeburn, Thornhill
 Whyte, Rev. R., Dryesdale, Lockerbie
 Wightman, John Seton, of Courance, Lockerbie
 Wilson, George, jun., Dalveen, Thornhill
 Wilson, James E., Banker, Sanquhar
 Wilson, P. M'C., Nether Gribton, Dumfries
 Wilson, Wm., Butknowe, Sanquhar
 Wright, Thomas, Bengall, Lockerbie
 Yorston, M. C., of Tinwald, Irvine House, Canonbie

EDINBURGH.

Adam, Robert, City Chamberlain, Edinburgh
 Adam, Stephen, 11 Hillside Crescent
 Ainslie, Daniel, 48 Moray Place
 Ainslie, David, of Costerton, Blackshields
 Ainslie, John, Fairfield, Loanhead
 Ainslie, John, jun., Hillend, Lothian Burn
 Aitchison, James, 60 Princes Street
 Aitchison, Lieut.-Col., of Drummore, Musselburgh
 Aitken, Dr. A. P., 18 Dublin St
 Aitken, James, Fairhaven, Eskbank
 Aitken, John, sen., V.S., Cansewayside
 Aitken, Thomas, 11 Orwell Place, Edinburgh
 Aitken, T., 5 Grosvenor Crescent
 Allan, James, Clifton, Mid-Caldor
 Amour, John, Cramond Bridge
 Anderson, Charles, jun., 377 High Street
 Anderson, John, 14 Dean Terrace
 Anderson, J. M., S.S.C., 1 Blackford Road
 Anderson, J. R., W.S., 53 Palmerston Place
 Anderson, W. M., Pirntaton, Stow
 Anderson, W. W., Norton Mains, Ratho
 Andrew, Robert, Smeaton, Dalkeith
 Archbald, T., of Viewbank, Lasswade

Archbald, T. B., 36 Craigmillar Park
 Archbald, James, Overshiels, Stow
 Archbald, John, Overshiels, Stow
 Arklay, John, 6 Gilmour Road
 Auld, Peter, Buteland, Balerno
 Baillie, John, Fullarton, Penicuik
 Bain, W. P. C., Lochrin Iron Works, Edinburgh
 Baird, Colin C., V.S., Clyde Street
 BAIRD, Sir James Gardiner, of Saughton
 Hall, Bart., Inch House, Liberton
 Baird, John W., 7 Union Street, Edinburgh
 Balfour, J. H., 7 Glencairn Crescent
 Bardgett, John, 28 Montgomery Street
 Bathgate, James, Middleton Lime Works, Gorebridge
 Bauchope, T., East Brucefield, West Calder
 Baxter, Edmund W., 9 Rutland Square
 Bayley, George, 18 Regent Terrace
 Beith, Donald, W.S., 15 Grosvenor Crescent
 Belfrage, A. J., 3 Durham Road, Portobello
 Belfrage, A. W., C.E., 1 Erskine Place
 Bell, John, of Castlereuvie, 35 Dublin Street
 Bell, Thomas, Cortleferry, Stow
 Berry, Walter, 11 Athole Crescent
 Bertram, D. N., St Katherine's Works, Sciennes
 Bertram, W., St Katherine's Works, Sciennes
 Bett, James, 20 St Bernard's Crescent
 Bett, Thomas, 12 St Bernard's Crescent
 Binny, Andrew, 9 Hart Street
 Blackwood, William, 45 George Street
 Blair, John, W.S., 9 Etrick Road
 Blair, Patrick, W.S., 7 York Place
 Blues, Andrew A., 29 Minto Street
 Bodiker, Anker, 8 Commercial St., Leith
 Boog, Thos. Elliot, 20 Pentland Terrace
 Borthwick, John, of Crookston, Heriot
 Branford, Wm. C., V.S., 23 Clarence Street
 Brechin, James, 1 West Newington Terrace
 Brockley, Robert M., Gourlaw, Rosewell
 Brodie, James, 8 Nelson Street
 Brodie, J. C., W.S., 26 Moray Place
 Brodie, Thomas D., W.S., 9 Ainslie Place
 Brown, George, 57 Hanover Street
 Brown, Richard, C.A., 28 St Andrew Square
 Brown, Thomas, Pentland Mains, Loanhead
 Brown, Wm., Currievale, Currie
 Brownlie, J., Bloom, Mid-Calder
 Bruce, E., 26 Greenside Place
 Bruce, John, W.S., 7 Melville Crescent
 Brunton, Wm., 4 Bernard St., Leith
 Bryce, Andrew, Craigtinny, Edinburgh
 BUCOLEUCH and QUEENSBERRY, The Duke of, K.T., Dalkeith House, Dalkeith
 Buchan, Alex., 72 Northumberland Street
 Buchanan, Archd., of Curriehill, Currie
 Buchanan, John, C.E., 24 George Street
 Burn, C. M. P., Prestonfield House
 Burnet, James, 4 Malta Terrace
 Burneth, Alex. E., W.S., 47 Heriot Row
 Burneth, George, Advocate, 21 Walker Street
 Burnley, W. F., 24 Ainslie Place
 Burton, M. B., Rosewell Mains, Rosewell
 Burton, J. Taft, of Toxside, Gorebridge
 Burton, J., Rosewell Mains, Rosewell
 Byres, Wm., Baadsmill, West Calder
 Caird, Alex. M'Neel, 78 Inverleith Row
 Calder, W., 19 Archibald Place
 Calder, William, 21 Commercial Street, Leith
 Campbell, Alex., 8 Charlotte Square
 CAMPBELL, Sir Archd. S. L., of Succoth, Bart., 28 Moray Place
 Campbell, James G., of Killyleoch, 23 Windsor Street
 Campbell, O. G., 5 Oxford Terrace
 Carrae, T., 9 Osborne Terrace
 Carphin, James R., C.A., 14 Hanover Street
 Carter, James, 5 Mayfield Gardens

Chambers, Robert, 10 Claremont Crescent
 Chirnaide, John, 48 Albany Street
 Christie, C. J., 6 Glenorchy Terrace
 Christie, William, Ardreich Lodge, Liberton
 Church, D. M., 27 Minto Street
 Clapperton, John, Gillsland, Spylaw Road
 Cleghorn, Thomas, Craighour, Liberton
 CLERK, Sir George Douglas, of Penicuik, Bart
 Clarkson, Alexander, Ormiston, Kirknewton
 Cook, Charles, W.S., 61 Castle Street
 Cook, Henry, W.S., 61 Castle Street
 Cook, John, W.S., 11 Great King Street
 Cook, Wm. Home, C.A., 1 Albion Place
 Cousin, George, 140 Princes Street
 Cowan, C., Wester Lea, Murrayfield
 Cowan, C. W., jr. of Logan House, Penicuik
 Cowan, George, Valleyfield, Penicuik
 Cowan, James, 35 Royal Terrace
 Cowan, John, of Beeslack, Milton Bridge
 Cowan, John, W.S., 12 Hill Street
 Cowan, John, 65 Albert Street
 Cowan, Robert, W.S., 9 Carlton Terrace
 Cowan, R., 13 Greenside Street
 Crabbie, John M., 33 Chester Street
 Craig, James, 33 Manor Place
 CRAIG, Sir J. H. Gibson, of Riccarton, Bart., Currie
 Craig, Dr William, 7 Bruntsfield Place
 Craik, John, The Bush, Roslin
 Crichton, Hew, S.S.C., 13 Nelson Street
 Crichton, Hew Hamilton, W.S., 13 Nelson Street
 Crichton, James, 47 George Street
 Crichton, Jas. Athur, 13 Nelson Street
 Croall, Robert, Craigcrook Castle, Blackhall
 Crombie, Alex., W.S., 137 Princes Street
 Cross, Adam P., Bowling Green Street, Leith
 Cross, Alex., 41 Constitution Street, Leith
 Cunningham, A. G., Rosebank, Currie
 Cunningham, C., V.S., Slateford
 Cunningham, St Clair, Bowling Green Street, Leith
 CUNNINGHAM, Sir R. K. A. Dick, of Prestonfield, Bart.
 Currie, James, Eastwood, Gorebridge
 Currer, David, 25 Northumberland Street
 Currer, P. K., Myreside, Edinburgh
 Dalsh, John, 5 South St Andrew Street
 Dalgleish, Geo., Rosebery Mains, Gorebridge
 Dalgleish, John J., 8 Athole Crescent
 Dalgleish, L., 1 Rutland Square
 Dallas, D. F., S.S.C., 3 Queen Street
 Dalrymple, Charles, of New Hailes, M.P., Musselburgh
 Dalziel, George, W.S., 66 Queen Street
 Darling, J. F. Stormonth, 38 Palmerston Place
 Davidson, Donald, 34 Regent Terrace
 Davidson, H., of Muirhouse, Davidson's Mains
 Davidson, James J., Saughton Mains, Murrayfield
 Davidson, W. J., 32 Drumsheugh Gardens
 Deans, Peter D., Mount Charles, Portobello
 Dewart, James Cumming, of Vogrie, Ford
 Dickson, James, Damhead, Loanhead
 Dickson, James J., C.A., 13 Clarendon Crescent
 Dickson, T. G., 3 North St David Street
 Dickson, W. T., W.S., 11 Hill Street
 Dobbie, John, Campend, Dalkeith
 Dobbie, John, Contractor, Leith
 Donald, Andrew, Spittal, Penicuik
 Donald, John, 10 Bristo Place
 Douglas, James, Couvaland, Dalkeith
 Douglas, William, 29 Grassmarket
 Dowell, Alex., 15 Palmerston Place
 Downie, Hay, Corstorphine
 Drybrough, Andrew, 36 Drummond Place
 Drybrough, Thos., 31 Royal Terrace
 Dudgeon, John, 15 Chalmers Street
 Dun, Finlay, 130 George Street

Macadam, Dr S., Surgeons' Hall
 Macadam, Prof. W. Ivson, Surgeons' Hall
 M'Alpine, A. N., Minto House, Chambers Street
 McCallum, A. I., 19 Grassmarket
 M'Candlish, Jn. M., 27 Drumsheugh Gardens
 M'Colloch, R. C., 7 Broughton Place
 M'Donald, D., 54 George IV. Bridge
 Macdonald, E. B., Granton Mains, Edinburgh
 Macdonald, James, 63 Princes Street
 MacDonald, William, 377 High Street
 Macdonald, W. S., The Priory, Newhaven Rd.
 M'Dougal, Thos., Eskvale, Penicuik
 M'Dougall, Wm., Woodburn, Morningside
 M'Dowall, Andrew, Harelaw, Currie
 M'Fadyean, Prof. J., Vet. College, 8 Clyde Street
 Macfie, C., of Gogarburn, Corstorphine
 Macfie, D. J., of Borthwick Hall, Heriot
 Macfie, R. A., of Dreghorn, Colinton
 Macfie, Wm., of Clermiston, Corstorphine
 M'Gowan, Robert, 2 Peel Terrace
 M'Gowan, William, 2 Peel Terrace
 M'Gregor, Donald, Royal Hotel, Edinburgh
 Macgregor, Donald R., Merchant, Leith
 M'Kay, Robert, 97 Broughton Street
 M'Kay, W. B., Inveralmind, Cramond
 Mackenzie, A., 19 Charlotte Square
 Mackenzie, A. K., of Ravelrig, 19 Grosvenor Crescent
 Mackenzie, A. D., Upper Grove Place
 Mackenzie, D. F., Merton Hall, Liberton
 Mackenzie, John, New Club
 Mackenzie, John, W.S., 16 Royal Circus
 Mackenzie, J. Ord, W.S., 9 Hill Street
 MacLagan, Prof. Sir Douglas, 28 Heriot Row
 MacLagan, R. C., M.D., 5 Coates Crescent
 M'Laren, Alex., 11 Assembly Street, Leith
 M'Minn, Francis, 1 Graham Street
 Macpherson, C. E. W., C. A., 28 St Andrew Square
 Macpherson, Prof. N., 2 Randolph Cliff
 Maitland, David, of Dundrennan, New Club
 Maitland, Col. K. Ramsay, 20 Castle Terrace
 Mann, W. S., S.S.C., 119 Princes Street
 Mansfield, Jas. L., 8 Chester Street
 Mark, John, Craigend, Stow
 Mark, Robert, Leven Street
 Marshall, W. H., of Callander, 25 Heriot Row
 Martin, J., Beechwood Mains, Corstorphine
 Massie, W. H., 1 Waterloo Place
 Mather, Edward, The Lee, Edinburgh
 Matthew, P. M., 32 Coates Gardens
 Maxwell, Jas., Glenconce Mains, Milton Bridge
 Meas, Wm., 54 Buccleuch Street
 Melville, John M. Balfour, of Pilrig, W.S.
 Melvin, A. E., Bonnington Wilkieston
 Melvin, Jas., 43 Drumsheugh Gardens
 Menzies, D. C. E., 30 York Place
 Menzies, John O., 6 Grosvenor Crescent
 Menzies, Robert, S.S.C., 5 North St David Street
 Menzies, W. D., 6 Grosvenor Crescent
 Menzies, Wm. J., W.S., 123 George Street
 Merricks, J. L., Gunpowder Mills, Roslin
 Methven, John, 6 Bellevue Crescent
 Mill, George, 5 Thistle Street
 Milne, Alex., 28 Hanover Street
 Milne, Peter, 12 Archibald Place
 Mitchell, Wm., S.S.C., 11 South Charlotte Street
 Moir, Peter, 74 Nicolson Street
 MONCRIEFF, Lord, 15 Great Stuart Street
 MONCRIEFF, Hon. Jas. W., 6 Ainslie Place
 Moncrieff, D. S., W.S., 24 George Square
 Monteith, E., Tower Mains, Liberton
 Mortimer, T. A., 88 George Street
 Morton, James S., 6 St Andrew Square
 Morton, Thomas, Redheugh, Gorebridge
 MORTON, The Earl of, Dalnashay, Wilkieston

Mungie, John, West Calder
 Mungie, John T., West Calder
 Munro, John C., yr., of Marchbank, Balerno
 Munro, William, of Marchbank, Balerno
 Murdoch, Geo. Burn, 2 Greenhill Bank
 MURK, Hon. Lord, 12 Ainslie Place
 Mure, William J., 39 Heriot Row
 Murray, A. G., 7 St Colme Street
 Murray, Robert, 54 Grove Street
 Murray, Robert, 7 Roxburgh Place
 Murray, R. W. E., 18 Seton Place
 Murray, Thomas, Braidwood, Penicuik
 Murray, Wm. Hugh, W.S., 48 Castle Street
 Mutter, J., 29 Chalmers Street
 Nisbett, J. M., of Cairnhill, Drum, Edinburgh
 Niven, A. T., C.A., 122 George Street
 Norie, H. H., Union Bank, Edinburgh
 Owens, William R., Leith
 Park, Ebenezer, Greenside Lane
 Park, James, Stonehill, Musselburgh
 Park, J. D., Greenside Lane
 Park, William, Brunstane, Portobello
 Pate, Andrew, Easter Middleton, Gorebridge
 Paterson, D. A., Merchant, Leith
 Paterson, George, Falhills, Penicuik
 Paterson, James, of Bankton, Mid-Calder
 Paterson, John, Meadowspott, Dalkeith
 Paterson, Richard L., Langside, Dalkeith
 Paterson, Thos., W.S., 81A George Street
 Patten, James, Advocate, 16 Lynedoch Place
 Paul, George M., C.S., 16 St Andrew Square
 Pendreigh, George, Calcune, Gorebridge
 Petrie, S. F., 360 Leith Walk
 Phillip, David, S.S.C., 41 Charlotte Square
 Pitman, Frederick, W.S., 11 Great Stuart Street
 Plenderleith, A., Moorfoot, Gorebridge
 Plummer, J., 11 Bruntsfield Place
 Pott, George, of Pitburn, 55 Albany Street
 Pringle, D., Torquhan, Stow
 Pringle, J., 5 Tipperlinn Road
 Pringle, John, Garvald, Gorebridge
 Pringle, Wm., Huntly Cot, Gorebridge
 Proudfoot, T., Pinkiehill, Musselburgh
 Ramsay, R. G. Wardlaw, of Whitehill, Rosewell
 Rankine, John, 10 Melville Street
 Reid, G. A., 333 Leith Walk
 Reid, J. J., Advocate, 15 Belgrave Place
 Reid, R. C. C.L., 72 George Street
 Renwick, Wm., Meadowfield, Corstorphine
 Rew, William, 4 Bernard Street, Leith
 Richard, John Miller, 20 Grosvenor Crescent
 Richardson, John, 59 Warrender Park Road
 Richardson, Ralph, W.S., 10 Magdala Place
 Riddell, A., 1 Victoria Street
 Rintoul, Charles, Levenhall, Musselburgh
 Ritchie, Charles, S.S.C., 20 Hill Street
 Ritchie, D., 13 Winton Street
 Ritchie, J., 14 Morrison Street
 Ritchie, W., of Middleton, Gorebridge
 Ritchie, W., Woolmet, Dalkeith
 Robertson, Chas. T. A., Kensworth Lodge, Pulwarth Terrace
 Robertson, Duncan, 73 Great King Street
 Robertson, J. A., C.A., 33 Charlotte Square
 Rolland, Adam, of Gask, 20 Athole Crescent
 Ross, Alex., 66 Queen Street
 Roushead, D., 21 Grosvenor Street
 Rutherford, G., Monteath's Houses, Gorebridge
 St Clair, J. S., 99 High Street, Musselburgh
 Sanderson, James, 8 Manor Place
 Sanderson, Wm., Furthland House, York Road, Trinity
 Seaton, K., 46 Rankeillor Street
 Scott, Alex., 3 Bellfield, Portobello
 Scott, A. T., S., 1 Hill Street
 Scott, Lord Charles, Dalkeith
 Scott, D. F., Meadowfield, Duddingston
 Scott, E. E., C.A., 10 Castle Street

- Scott, Lieut.-Col. F. C., C.B.
 Scott, Prof. John, 63 Princes Street
 Scott, Maj.-Gen. J. C., United Service Club
 Scott, R. B., C.A., 10 Castle Street
 SCOTT, Lord Walter, Dalkeith
 Seton, George, 42 Greenhill Gardens
 Seton, Henry, V.S., Tollcross
 SHAND, Hon. Lord, 80 Heriot Row
 Shand, John, M.D., 34 Albany Street
 Simpson, Alex., Wallyford, Musselburgh
 Simpson, George, 2 Lauder Road
 Simson, C. S., 7 Nelson Street
 Skene, Wm. F., W.S., 20 Inverleith Row
 Skinner, W., of Corra, W.S., 35 George Square
 Skirving, E. Scot, 29 Drummond Place
 Skirving, Thos. M., Niddrie Mains, Liberton
 Sligo, A. V. Smith, 5 Drummond Place
 Small, James, Commercial Bank, Edinburgh
 Smart, Alex., Bow, Stow
 Smart, Jas., Liberton Park, Liberton
 Smart, J. C., 54 George Square
 Smith, A. D., C.A., 29 1/4 Andrew Square
 Smith, George Bell, S.S.C., 37 Charlotte Sq.
 Smith, J., 89 Grassmarket
 Smith, J. Turnbull, C.A., 5 Belgrave Place
 Smith, Robt. G., Georgeville, Mid-Caldor
 Smith, R. M., 4 Bellevue Crescent
 Smith, Thomas H., National Bank, Edinb.
 Somerville, James, S.S.C., 23 South Blacket Place
 Somerville, Wm., 46 Findhorn Place
 Starforth, John, Architect, 37 York Place
 Steel, Major Gavin, 17 Abercromby Place
 Steell, Gourlay, R.S.A., 4 Palmerston Place
 Stenhouse, James, South Gyle, Corstorphine
 Stenhouse, Jas., Turnhouse, Cramond Bridge
 Steuart, James, Dalkeith Park, Dalkeith
 Steuart, J. H., Selma, Kirknewton
 Stevenson, Andrew, 17 Learmonth Terrace
 Stevenson, David Alan, C.E., 84 George Street
 Stevenson, Thomas, 12 Brighton Place, Portobello
 Stewart, J. C., yr., of Ingliston, Ratho
 Stewart, J. K., 10 Salisbury Road
 Stewart, Robert, of Ingliston, Ratho
 Stewarth, Robt., W.S., 12 So. Charlotte Street
 Stratton, David, 13 Middleby Street
 Sutherland, Jas. B., S.S.C., 10 Windsor Street
 Swan, James, 37 Lauriston Place
 Swan, Thomas, 37 Lauriston Place
 Syme, David, 1 George IV. Bridge
 Syme, David Fraser, C.A., 11 York Buildings
 Syme, James, Millbank, Edinburgh
 Syme, Jas. G., 38 Lauder Road, Grange
 Symington, James, 55 Fountainhall Road
 Taik, James, 4 Montebello, Joppa
 Tawse, John, W.S., 11 Royal Terrace
 Tawse, John W., W.S., 49 Queen Street
 Taylor, Alex., Pathhead, Ford
 Taylor, Peter, Lochend
 Taylor, Thomas, Seed Merchant, Dalkeith
 Thiem, Albert M., Windsor Hotel, Princes St.
 Thin, John, Ferniehurst, Stow
 Thoms, Geo. Hunter, 13 Charlotte Square
 Thomson, Alex., Morton House, Lotian Burn
 Thomson, Andrew, 15 Inverleith Place
 Thomson, Charles W., C.A., 10 Lennox Street
 Thomson, James, 53 George Street
 Thomson, John Comrie, 24 Great King Street
 Thomson, Lockhart, S.S.C., 114 George Street
 Thomson, Mitchell, 13 Queen Street
 Thomson, Peter, Conservative Club, Princes Street
 Thomson, W., 5 Torphichen Street
 Thomson, W. A., 39 Commercial Street, Leith
 Thornburn, David, Brookhouse, Stow
 Thynne, John, 21 Danube Street
 Thynne, Wm., 4 Spring Gardens, Stockbridge
 Tod, James C., Currie
 Tod, John W., W.S., 66 Queen Street
 Todd, David, 2 Dick Place
 Todd, James, 119 South Marchmont Road
 Torrance, Archibald P., Kippiclaw, Dalkeith
 Torrance, T. A., Canips, Wilkieston
 Torrance, W., Camps Lime Works, Wilkieston
 Traquair, Ramsay L., Colinton
 Trotter, Coutts, 17 Charlotte Square
 Trotter, Lieut.-Colonel H., of Morton Hall
 Trotter, Lieut.-Colonel R.A., of the Bush
 Tuke, Dr J. B., Saughtonhall
 Turnbull, David, W.S., 5 South Charlotte Street
 Turnbull, John, W.S., 49 George Square
 Turner, Prof. Sir W., M.B., 6 Eton Terrace
 Tytler, James Stuart, W.S., 23 Young Street
 Usher, John, of Norton, Batho
 Ventch, Chris., 24 Queen Street
 Waddell, A. Fiddie, 4 Great Stuart Street
 Waddell, John, 4 St Andrew Square
 Wakelin, John, Oil Mills, Musselburgh
 Walcott, John, 13 Greenside Place
 Walker, Alexander, Stagebank, Heriot
 Walker, Alex. J., 5 Manor Place
 Walker, Jas., of Dalry, Hanley, Corstorphine
 Walker, James, Limefield House, West Calder
 Walker, W. C., yr. of Bowland, 5 Manor Place
 Walker, Sir W. S., K.C.B., 125 George Street
 Wallace, Prof. Robert, University, Edinburgh
 Wallace, S. W., Brunstane House, Joppa
 Walley, Thos., Principal, Veterinary College, Clyde Street
 Wardrop, W. M., Kevoek Bank, Leaswade
 WARRENDER, Sir G., of Lochend, Bart., Bruntsfield House
 Watherston, James, 29 Queensferry Street
 Watherston, Wm., 20 Queensferry Street
 Watson, Adam, 23 Union Street
 Watson, G. G., W.S., 45 Charlotte Square
 Watson, George, of Colzium, Park House, Grange
 Watson, James Graham, 45 Charlotte Square
 Watson, James M., 2 Fingal Place
 Watson, William, Moat, Roslin
 Wauchope, Lieut.-Colonel A. S., of Niddrie
 Marschall, Liberton
 WAUCHOPE, Sir John Dou, of Edmonstone, Bart., Liberton
 Wauchope, J. D. D., yr. of Edmonstone
 Webster, J., 12 Brunstane Road, Portobello
 Welsh, Henry, 6 George Street
 Welsh, W. M., Liberton Mains, Edinburgh
 Welwood, J. A. Macconchie, Meadowbank House, Kirknewton
 Wenley, James A., Bank of Scotland
 White, James, Stagehall, Stow
 White, Robert, Osterston, Gorrilridge
 Whittet, George, Easter Drylaw, Davikson's Mains
 Wight, Robt., Eskbank, Dalkeith
 Wilde, Captain W., of Ormiston, Kirknewton
 Will, Robert W., S.S.C., 37 Queen Street
 Williams, W., Principal, New Veterinary College, Leith Walk
 Williams, W. O., New Veterinary College, Leith Walk
 Wilson, Dr Alex., Ashville, Mid-Caldor
 Wilson, John, of Alderton, Mid-Caldor
 Wilson, John J., Clydesdale Bank, Penicuik
 Wilson, Peter, 3 Walls Place
 Wilson, Richard, C.A., 28 Great King Street
 Wilson, Robert, Sunnybank, Corstorphine
 Wishart, D. F., 15 Picardy Place
 Wright, David, Ravenswood, South Oswald Road
 Wyllie, Alexander, W.S., 21 Castle Street
 Wyse, G. B. M., 11 Northumberland Street
 YOUNG, Hon. Lord, 28 Moray Place
 Young, Archibald, 23 Royal Circus
 Young, John, Larch Grove, Balerno
 Younger, George, 15 Carlton Terrace
 Younger, Henry J., Abbey Brewery
 Younger, Robert, 15 Carlton Terrace

ELGIN.

Adam, James, Coullardbank, Lossiemouth
 Aleock, John, Bank of Scotland, Elgin
 Anderson, Robert, Viewfield, Elgin
 Balmer, Thomas, Fochabers
 Black, James, *Elgin Courant and Courier*,
 Elgin
 Brebner, Robt, Surradale, Westfield, New
 Spynie
 Brodie, Hugh, of Brodie, Brodie Castle,
 Forres
 Brown, William, Earlsmill, Forres
 Brown, William, of Dunkinty, Elgin
 Brydon, John, Forester, Rothes
 Cameron, Alexander, of Manhouse, High
 field, Elgin
 Colvin, James E, Wester Manbeen, Elgin
 Cooper, Alexander, Solicitor, Elgin
 Creak, Dr A, Dalry, Advie Strathpey
 Cruickshank, David, Meft Elgin
 Cruickshank, John, Knock Elgin
 Cruickshank, John, Dandalet, Craigellachie
 Cumming, Lewis, Curlew, Craigellachie
 CURRIE, Sir Wm G Gordon, of Altyre,
 Birt, Forres
 Douglas, John, Maronburgh, Ballindalloch
 DUNBIE, Sir Arch of Northfield, Birt
 Ferguson, John, Lossiemouth
 Guden, Archd, of Bernery, Forres
 Gordon, George, Land Surveyor, Elgin
 Grant, C Macpherson, of Drumdun, Forres
 Grant, George, Glentworth, Ballindalloch
 GRANT, Sir George Macpherson, of Ballin-
 dalloch Birt
 Grant, John Macpherson, yr of Ballin-
 dalloch
 Grant, J, Mains of Advie, Advie
 Grant John Inverludun, Carr Bridge
 Grant, William, Wester Alves, Forres
 Haddon, P M St Marys, Oton, Fochabers
 Hunter, John, Dipple, Fochabers
 Lawrence, James, Forres Mills, Forres
 Leitch, A K, Inchstelly, Forres
 McBean, D, Auchterblur, Carr Bridge
 McGregor, Captain James, Balmenach, Crom-
 die
 Macdonald, Wm, Carrowell Alves
 Mackay, H M, Banker, Elgin
 Mackay, R J, Burgie Lodge, Forres
 Mackenzie, F C, Forres
 Mackenzie, Thomas, Curion, Strathpey
 Mackessack, George E, yr of Ardye and
 Roseisle, Forres
 Mackessack, James, Earnside, Forres
 Mackessack, John, Balnaferry, Forres
 Mackessack, John, Kinkess, Forres
 Mackessack P H, Westerfolds, Elgin
 Mackessack, Robert, of Ardye and Roseisle,
 Forres
 Mackessack, E H, Newton of Struthers,
 Forres
 McWilliam, James, Stonytown, Keith
 Mun, Alexander, Bilmouth, Gintown
 Mavor, William, Easterton, Elgin
 Morrison, Alexander, Nusserym, Elgin
 Peterkin, James Grant, of Gintown, Forres
 Petrie, George, Rosehangh, Elgin
 Petrie, George, Pitulie, Elgin
 Petrie, William, Kirkhill, Elgin
 Petrie, W A Roseisle, Elgin
 Reid, Alexander, Architect, Elgin
 Robertson, Wm A, Mayfield, Forres
 Ross, Dr James, Linkfield, Elgin
 Russell, Alex, Myreside, Elgin
 Scott Robert, Wester Manbeen, Elgin
 SEARFIELD, The Laird of, Mayne House,
 Elgin
 Sinclair, R S T, Seafeld Estates Office,
 Elgin
 Suttin James, The Collie, Fochabers

Tait, George, V S, Elgin
 Tait, George, jun, V S, Elgin
 THURLOW Lord, Dunphail, Forres
 Tulloch, John, Graingergreen, Forres
 Urquhart Robert, jun, Forres
 Walker, Robert, Altyre, Forres
 Walker, William, Kintae, Elgin
 Watson, H A, U P Manse, Forres
 Watt, James, Mains of Mulben, Keith
 Wight, Alexander, Ironmonger, Forres
 Wilson, George, Marypark, Ballindalloch
 Wool, Thos Calcott, Elgin
 Young, James, Waterton, Elgin

FIFE

Aitken, George, Tyrie, Kirkcaldy
 Aitken, George Lewis, Poghilly, Kirkcaldy
 Alexander, J, of Bilmouth, Dunfermline
 Anderson, Charles, Pittykill, Leslie
 Anderson, David, Cassendilly, Cupar Fife
 Anderson, W H, Anchor Lodge, Anstruther
 Andrews John, Melville, Ladybank
 Inman, John, Tull, Mochnae, Cupar Fife
 Arnot, David, Frinton, Newport Bue
 Arnot, Thomas, Newton of Falkland, Falk-
 land
 Auchterlome Alex, Cleich, Cupar Fife
 Auchterlome J S, Dethin, Kirkcaldy
 Aytoun E S, of Inverlome, Kirkcaldy
 Baird, William, of Elie, Elie
 Balfour, Edward, yr of Bilmouth, Muirinch
 Balfour, Major I W, of Kerne Castle,
 Cupar Fife
 Balfour, John, of Bilmouth, Muirinch
 Balmnash, Neil, Sweetbank, Muirinch
 Ballingall, Wm, Sweetbank, Muirinch
 Ballingall, John, Dumbog, Newburgh
 Barclay, Robert, Duns, Falkland
 Baxter, Edward, Gairiel, of Fessies, Largo
 Beith, David, Auchmur, Leslie
 Bell, David, Todhall, Cupar Fife
 Bell, Dr James V, Kettle
 Bell, John, Stanton, St Monance
 Bell, T, Cruickshank, Leslie, Buntland
 Bennett, Arthur, South Pitmarne, Lochgelly
 Berwick, David, Ardross, Elie
 Bethune, Alexander, of Blebo, Cupar
 Fife
 Bethune, Colonel E, of Ardie, St Andrews
 Beveridge, David, Buckhorns, Largo
 Beveridge, George, Kirkcaldy
 Beveridge, J S, Crombie, Dunfermline
 Beveridge, William, of Bonnyton, Dunferm-
 line
 Beveridge, William, Kirkcaldy
 Leveridge, William, jun, East-Range, Dun-
 fermline
 Birl, Ebenezer, Glenduckie, Newburgh
 Lisbet, Alex, Lifford, Muirinch
 Black, James, Pullybreck, Muirinch
 Blackett, J S, Ruth, Kirkcaldy
 Blyth, James, Leckbank, Auchtermuchty
 Bonthrone, I, Newton of Falkland, Falk-
 land
 Bothwick W H, Barham, Cupar Fife
 Bowman James, Newk, St Monance
 Buggs, Major General of Strathilly, Largo
 Brown, John, of Colton, Dunfermline
 Bruce, A H T, of Kirkland, Ladybank
 Bruce, Hon E P, M P, Broomhall, Dun-
 fermline
 Bruce, T, of Arnot, Arnot Tower, Leslie
 Buchan, Thomas, Bilmouth, Largo
 Cairns John, Parkhill House, Newburgh
 Campbell, Lieut Col A H, Cunnockine,
 Cupar Fife
 Cant, James, Orr Bridge, Kirkcaldy
 Carnegie, James, of Aytoun Hill, Newburgh
 Carswell David, of Rethillet, Cupar Fife

Carawell, J. H., Straiton, Leuchars
 Cartwright, T. R. B. Leslie Melville, Lady-
 bank
 Cathcart, James T., yr. of Pitcairrie, Auch-
 termuchty
 Cathcart, R., of Pitcairrie, Auchtermuchty
 Cheape, Captain G. C., yr of Wellfield, Strath-
 miglo
 Cheape, J., yr. of Lathockar, St Andrews
 Christie, F. W., Dairsie Mains, Cupar Fife
 Christie, John, Kirktonbarns, Tayport
 Christie, P., Mains of Scotsraig, Tayport
 Cleghorn, Dr., of Stravithy, St Andrews
 Constable, James, of Glencaig, Lochgelly
 Coventry, William, Craigholm Crescent,
 Burntisland
 Crawford, R., Balbougie, Inverkeithing
 Cunningham, David, Burntisland
 Cunningham, John, Burntisland
 Cunningham, T. D., The Mount, Cupar
 Curror, Peter, Malfater, Kirkcaldy
 Davidson, George, Ranchory, Kinghorn
 Dinwallow, William, Ramornie, Ladybank
 Dougall, Admiral Maitland, R.N., of Scots-
 craig
 Drummond, J., jun., Blacklaw, Dunfermline
 Dryburgh, J., Kininmonth, Cupar Fife
 Drysdale, Wm., of Kirrie, Kinghorn
 Dunn, George, Balgonie, Abernethy New-
 burgh
 Duncan, Alex., Craigfoodie, Cupar Fife
 Duncan, John, Kirkmay, Crail
 Duncan, John, yr. of Kinkell, St Andrews
 Duncan, John W., Bophall, Kingbarns
 Duncan, Robert, of Kirkmay, Crail
 Duncan, Thomas L., Park, Leuchars
 Elder, Hugh, Dunfermline
 ELGIN and KINCARDINE, The Earl of, Broom-
 hall, Dunfermline
 ELPHINSTONE, Hon. Edward C. B., Comrie
 Castle, Dunfermline
 ERSKINE, Sir Thomas, of Cambo, Bart., Crail
 Farmer, A. F., of Brownhills, St Andrews
 Farmer, Robert, of Kingask, St Andrews
 Ferguson, R. C. Munro, of Raith, M.P.,
 Kirkcaldy
 Fernie, J. C., Union Club, St Andrews
 Finlay, John, Lochend, Lochgelly
 Flockhart, J., Banker, Colinsburgh
 Forgan, James, Sunnybraes, Largo
 Fortune, George, Ramsay, Crail
 Foulis, Sir James Liston, of Colinton, Bart.
 St Andrews
 Foulis, Dr R., of Cairney Lodge, Cupar Fife
 Fyfe, Robert, Pitconochie, Dunfermline
 Fyfe, Jas., jun., Treason, Markinch
 Gibb, David, Balmouth, Pittenweem
 Gilchrist, Andrew, Carvennom, Anstruther
 Gillespie, Alex., Balmeadowisdie, Cupar Fife
 Gillespie, D., of Mountquhannie, Cupar Fife
 Gilmour, John, Montrave, Leven
 GLASGOW, The Earl of
 Grace, Stuart, St Andrews
 Gray, T. M., Barony Cottage, Cupar Fife
 Grieve, James, Langless, Torryburn
 Haig, H. V., Ramornie, Ladybank
 Hain, James, Tontine Hotel, Cupar
 Heggie, H., Mains of Beath, Crossgates
 Heggie, R. B., West End House, Kirkcaldy
 Hepburn, James, Links House, Kinghorn
 Hepburn, John, Kinghorn
 Heruman, B. A., Falkland Wood, Falkland
 Hill, A., of Stonywynd, St Andrews
 Hill, David, Upper Magus, St Andrews
 Hill, John, Langside, Kennoway
 Hogarth, George, Banker, Cupar Fife
 Honeyman, A. P., Writer, Kirkcaldy
 Hunt, J. A., of Pittencreeff, Dunfermline
 Husbard, D., Struthers, Cupar Fife
 Hutchison, Alex., Ingleside, Kirkcaldy
 Ireland, David S., of Denork, St Andrews!

Irvine, Walter, of Grangemuir, Pittenweem
 Jamieson, W. T., Solicitor, Anstruther
 Jeffrey, John, of Bainsbury, Largo
 Johnston, S. W., Finnerdy, Newport
 Johnstone, W. M., Banker, Cupar Fife
 Kidd, A. F., High Street, West Aberlour
 Kininmonth, Peter, Collairnie, Newburgh,
 Fife
 Kinnear, John Boyd, of Kinloch, Ladybank
 Knight, Robert, jun., V.S., Dunfermline
 Landale, James, Woodmill, Auchtermuchty
 Landale, John, of Woodbank, Dunfermline
 Lauder, Dewar, South Street, St Andrews
 Lawrie, John, Kirklandhill, Leven
 Lawson, Alex., of Burnturk, Kettle
 Lawson, Thomas, of Carriston, Markinch
 Lees, David, Pitseattie, Cupar
 LESLIE, Hon. G. Waldegrave, Leslie House,
 Leslie
 LINDSAY, The Earl of, Kilsconquhar House
 Landesay, W. F., St Andrews
 Macdonald, Alex., of Edenwood, Cupar Fife
 MacFarlane, James, Writer, Dunfermline
 McIntosh, Dr, University, St Andrews
 Maitland, Henry, Balmungo, St Andrews
 Marshall, Walter, of Lochmaloney, Cupar
 Martin, Jas., Pricestield, Pittleslie, Ladybank
 Matheson, Kenneth, Dunfermline
 Meldrum, D. B., of Kincaid, St Andrews
 Meldrum, J., of Eden Bank, Pittenweem, Cupar
 Fife
 Menzies, Fergus, Blackhall, Dunfermline
 Millar, J., of Waulkhill, Dunfermline
 Milho, George, Lordscarrine, Cupar Fife
 Mitchell, Alex., Fimmonth, Kingussie
 Mitchell, David, Middle Mill, Markinch
 Mitchell, John, Fliskinn, Cupar Fife
 Mitchell, John, Skeddoway, Kirkcaldy
 Mitchell, Robert, 3 Bonnygate, Cupar Fife
 Morrison, B. C. W., of Walfield, Cupar Fife
 Morton, J., Lambieclatham, St Andrews
 Muckersie, Henry, Drumfin, Dunfermline
 Muirhead, T., Townhill Store, Dunfermline
 Munro, John, of Springfield, Cupar Fife
 Nairn, M. B., of Rankellour, Cupar
 Nisbet, Ralph P., 4 Dempster Terrace, Ht
 Andrews
 Nisbet, T. M., Forthar, Kettle
 Normand, William J., Dysart
 Oliphant T. T., Queen Mary's, St Andrews
 Oswald, J. T., of Dunnikier, Kirkcaldy
 Osborne, David, Banker, Cupar Fife
 Page, Walter, Hogloys, Kirkcaldy
 Paton, John, Kirkness, Lochgelly
 Pitblado, C. B., Charlestown, Dunfermline
 Pitcairn, D. D., Kinnaird of Newburgh
 Pitcairn, John, 9 Abbotsford Crescent,
 Andrews
 Prentice, G., of Strathore, Thornton
 Prentice, R. R., Cameron Bridge House,
 Thornton
 Purvis, John, of Kinaldy, St Andrews
 Reekie, A., Walton, Auchtermuchty, Kirkcaldy
 Reid, Andrew, V.S., Auchtermuchty
 Reid, John, of Dunduff, Dunfermline
 Rigg, James Home, of Tarvit, Cupar Fife
 Rintoul, D., Mains of Biele, Cupar Fife
 Roberts, J., Greenhead of Arnot, Leslie
 Robertson, Donald, of Mayfield, Cupar Fife
 Robertson, J., Denbrae, Cupar Fife
 Rodgie, Henry, Atherrie, Leven
 ROSSLYN, The Earl of, Dysart House
 Russell, A. W., of Keillygreen, St Andrews
 Russell, Arthur, Royal Bank, Cupar Fife
 Russell, David, Silverburn, Leven
 Russell, George, Hatton, Largo
 Russell, James, Parbroath, Cupar Fife
 Scott, John, Hillhead, St Andrews
 Sheppard, Thomas, Moonzie, Cupar
 Sims, Alex., Dumbarrie, Largo
 Simpson, John, Burntisland

Small L of Foch Cupar
Smith James I Duloch Inverkeithing
Smith Thomas Inverdonat Newport
Smith Wm Birlanl Ceres Fife
Spears W B Writer Kirkcaldy
Spowart F of Barmheill Dunfermline
Stack Robert Kirkcaldy
Stenhouse J S of Northford Dunfermline
Stevenson John Lillyhall H Dunfermline
Swan P D Kirkcaldy
Syme William Craigie Leithers
Thom James of Ledentigubart Strathmulo
Thom James I Wallyreen Windyates
Thom R D Pitlochrie Strathmulo
Thomson Colonel John A of Charlevoix
Colonsburgh
Tod George Curneyhill Dunfermline
Tod James Erster Wsh Strathmulo
Troup Alevanl Strathmulo
Tulloch James Diles Inverkeithing
Turnbull James St Olme House Aberdour
Ventch Walter Gange Kin haan
Walker Archd Banker Auchtermuchty
Walker Ilios Dumputon Auchtermuchty
Walker W South Ostrer Kinchurns
Wallace George Inver Cupar
Wallace James Prike St Andrews
Wallace P A Lhynd Dunfermline
Wallace I A Banker Burntisland
Wallace William Kinross Leithers
Wallace William Newton Colleslie
Ludylmk
Walls Robert Grange Burntisland
Wardlaw J J Villiebank Inverkeithing
Watt Alex B Lutton Kirkcaldy
Watt George Kilmory Cupar Fife
Watt W Seel Merchint Cupar Fife
Wedderburn H S of Wedderburn Birkhill
Cupar
Weirton J G of Priorletham St Andrews
Wemyss D W Newton Bank St Andrews
Wemyss R G E of Wemyss Kirkcaldy
Wemyss Miss Eskine Fannie Dunfermline
Whyte John Laidin Mill Lu
Wilkie George C Widdows Dysart
Wilson George Gidstone Cottes Cupar
Wilson I Seel Cusheer Burntisland
Wilson Lecht M of Tod Bank Dunfermline
Wood Major William Fullinl
Wyatt S Nydie Mun St Andrews
Young A Lochtyale Inverton Kirkcaldy
Younger J B B C, North Cullane Cupar

FORFAR—Eastern Division

Alison Wm Clerkbank Strathmulo Brechin
Anderson D Woodhill Carnoustie
Anderson James jun, Muns of Lunkhill
Airth
Anderson Jns Westale Brechin
Aikley R H Rosemont Montrose
Aikley Jh S Downie Villa Inverton Furry
Bell J hn B Burnton Airth
Bowman Thomas Vayne Leun Brechin
Bryce J jun Easter Birkie Airth
Campbell I A of Strathmulo M P Brechin
Campbell Jns Morton jn of Strathmulo
Brechin
Cunningham Alex of Redhall Forebank House
Brechin
Cunningham H L of Kinklethmont Airthroath
Cunningham G of Dunlappie Brechin
Chaplin W Roberton of Warrington
Brechin
Collier John Hatton Huse Cupar
Colquhoun Dug Vintrol Works Carnoustie
Couper John Balrowie Brechin
Cowe George Ballusie Carnoustie

Croll John Ochrad Park Brechin
DALHOUSIE Ith Earl of Brechin Castle
Brechin
Dickson James I Woolville Airth
Dickson J B Inverkeithing Carnoustie
Dowall J P Kelly Lenchfull Airthroath
Duncan Jas I native Vill Carnoustie
Eskine J L of Inverkeithing Brechin
Inverkeithing J hn Chrycltown Brechin
Flemer D Milton f Conon Airthroath
Finlayson James Ealthe Airthroath
Fraser Pat A of Hospitalfield Airthroath
Guthrie C M L jn of Cupar
Hood D M Gethill Furry Carnoustie
Hume David Laidell Brechin
Jameson D Auchmithie Wm Airthroath
Johnstone James Lochside Airthroath
Laidell G W f Denfull Airthroath
Laidell Chris Oll Montrose
Laidell David Ollery Montrose
McCorquoddie David Banker Carnoustie
Moline John Can Merchint Montrose
Mitchell Charles Banker Laidell
Mitchell James Merchint Montrose
Mitchell Wm Merchint Montrose
Mitchell Wm Merchint Montrose
Muir D South Muns of Fife Airthroath
Muir William Hiltun of Fern Brechin
Ogilvie David Fuhills Airthroath
Istullo J of Ashmure Abertay Brechin
Ferry
Paton Alexander Broomnolds Brechin
Pattie David Royal Hotel Airthroath
Robertson D S Cookston Park Brechin
Robertson James Pimmur Carnoustie
Rogers Geo West Muns of Ethie Airthroath
Rogers Fcbt jun Muns of Dun Montrose
Salmond James Currie Airthroath
Scott D G C, Warrondie Brechin
Scott William Pitforthe Brechin
Shapherl John Landie Brechin
Shiell J T Fust Muns of Rosie Montrose
Shiell John Brechin
Smith Wm West Drums Brechin
Sutton D Innis Vills Brechin
SOUTHSIDE The Earl of Kilmarnock
Castle Brechin
Stansfeld Capt John Dunninall Montrose
St John George Cantarlan Montrose
Swan James Inverkeithing Carnoustie
Swan W Birlanl Montrose
Taylor J hn Leicest Airthroath
Tennant James Carnoustie
Thomas Alex M Airthroath
Thomson James Dunmill Montrose
Vallentine George Brechin
Wood Chris Banker f House Brechin
Young George Inverkeithing Carnoustie

FORFAR—Western Division

Adams Dr James Othlaw Forfar
Aikley Ith f Forfar f Wile
Alexander John Birlanl Kilmarnock
Anderson R W Rose Leine Inver
Aikley Robert of Ethie f Dunde
Aikley Wm Gums Muns
Birlanl H H Provost of Dundee
Bell Alex Kirkton of Leath, Dundee
Bell G Burns of Clivehouse Dundee
Bell Thomas Birlanl Kilmarnock
Bett Thos Fiteimo Dundee
Black John Cortuly Kilmarnock
Brud Thomas Assent f Furry
Bruce Andrew Jordonston Warr
Burr Rev P Lorimer Landie Warr
Dun
Butter David Corston Coupar Angus
Butter Thomas A Corston Coupar Angus

Cameron, James, Muirhill Fauna Works,
Forfar
CAMPERDOWN, The Earl of, Camperdown,
Dundee
Carnegie, W, yr of Dunlappie, Coull, Forfar
Carter, John, Kinloch, Muirde
Clark, Jas, MRCVS, Abbeyhill, Coupar
Angus
Cowper, James, Over Migvie, Kirriemuir
Cov, Geo M, Beechwood, Dundee
Dalgleish, W Ogilvy, of Mayfield, Dundee
Duke, Wm, Newbarns, Kirriemuir
Duncan, John, East Memus, Kirriemuir
Duncorn, Patrick G, East Memus, Kirriemuir
Duncorn, Wm Weltown, Meigle
Duncorn, W G, Birkcraigh, Leith, Dundee
Easson, David, Camperdown, Dundee
Forbes, James, jun, Kirriemuir
Geekie, Alex, of Buldowie, Coupar Angus
Gellatly, Wm, Seed Crusher, Dundee
Gowlay, James, Bibber Hill, Aberlennano
Graham D M, Auctioneer, Forfar
Gull, Thomas, Herdhill, Kirriemuir
Harris, Wm, Inukeeper, Alyth
Henderson, G D C, Com R N, of Invergowrie, Dundee
Hill, James, Braidest m, Meigle
Kinloch, Col John Grant, of Kilmie, Logie,
Kirriemuir
L'Am, J R, of Dunlenny
Lawson, Thomas, Sandyford, Kirriemuir
Lawson, Wm, City Bank, Dundee
McGavin, Robert, of Balmahie, Dundee
Menzies, R S, of Pitmu, M P, Hillyburton
House, Coupar Angus
Miller, O G, of Pittanurech, Dundee
Mitchell James, A Black Cake Mills Dundee
Nicoll, T Munro, Littleton, Kirriemuir
Ogilvy, Sir John of Inverquharity, Burt
Ogilvy, John, Huerlug, Dundee
Osler, Andrew, Kintyre, Kirriemuir
Pittallo, Wm, 18 St Andrew Street, Dundee
Powrie, James, of Reswille Forfar
Purmerose, A G, Dock Street, Dundee
Ridston Andrew, Glams House Glams
Bend, James Kilmindly, Glams
Ritchie, R B, Accountant, Dundee
Rogers, James S, Rose Mill, Dundee
Rogers Wm, Ph D, Rose Mill, Dundee
Ross, Wm, North Drumdry Lough
Scott, Robert, Thim Muns, Forfar
Small, W J Dundee
Smith, Thomas, Powrie, Dundee
Smith, Thomas, Mains of Fowles Dundee
Smith William, Braidery Dundee
STATHURF, The Earl of, Glams Castle
Thips Robert, Glams Hotel, Glams
Turnbull George, Birkbuckie Tinnulce
Watson Wm, of Hailmy Muns Lough
Wedderburn George, Balvies, Forfar
Whitton and Cousin, Newtyle
Whyte, Archibald, Sp. Ht, Kirriemuir
Whyte, Archibald, jun, Nether Hayston,
Forfar
Whyte, John West Deacon Glams
Whyte, William Spott, Kirriemuir
Wilkie, James South, Kirriemuir
Wilson, F Mackay, Solicitor, Kirriemuir

HADDINGTON

Ainslie, R, of Elmiston, Glamsmuir
Aitken, Mark Thynne, Prestonkirk
Anderson, Colonel of Bournemouth Dunbar
Anderson, & B, Meikle Pinkerton, Dunbar
Andrew, H, Lennoxville Acadiles Haddington
Armstrong, W F Craighall Longmiddy

BAIRD, Sir David, of Newbyth, Burt, Prestonkirk
Balfour, Right Hon A J, of Whittinghame,
M P, Prestonkirk
Bellage, James, Samuelston East Mains,
Haddington
Bertram, Hugh, Newbyth, Prestonkirk
Binnie, John, Bunknowles, Cockburnspath
Brand, James, Dunbar
Bridges, Andrew, Engineer, North Berwick
Broadwood, T, Crowthill, Dunbar
Brodie, James C, Thounfonloch, Dunbar
Brown, J, Minerva, Ormiston, Traquent
Burns, And, Harelaw, Longmiddy
Campbell, Geo, Rhodes, North Berwick
Caverhill, A M, Crichness Duns
Christie, James M, Sunnyside, Prestonkirk
Clapperton, James, Garvald Muns, Prestonkirk
Clark, James, Kinkindhill, Dunbar
Clark Thos, Oldhamstock, Muns, Cockburnspath
Counlsey, Wm, Portobello Farm, Traquent
DALRYMPLE, Sir Hew, of North Berwick,
Burt, Luchie, North Berwick
Durling, James, Priestlaw, Duns
Deans, John, East Fenton, Drem
Dempster, G, Ormiston Hall, Traquent
DEYKIN, Lord, Alderston, Haddington
Doicks, Small, Sonnenfield, Haddington
Dyrlale, Henry, Begbie, Haddington
Dudgeon, James, Upper Keith
Dunie, John, Traquent
ELCHO, Lord, M P, Gosford, Longmiddy
Elder, Hugh, 21 Beauford, Haddington
Essm, Robert, Beltonford, Dunbar
Ewart, H, Lynninghame, Prestonkirk
Fletcher, J, of Salton, Traquent
Ford, Wm, Fenton Bams, Drem
Fysha, Peter, Wamphray, North Berwick
Gaukioeger, G, Southfield, Longmiddy
Gibson, Francis, Oathfield, Drem
Gray, William, Brownrigg, North Berwick
Gray, W W, of Nunraw, Prestonkirk
Greenshields, T A, Windymans, Salton
Guld, Jas, Balgoun Villa, North Berwick
Guld, James Lyon, Abbey, North Berwick
HADDINGTON, The Earl of, Lynninghame,
Prestonkirk
Hall, Sir Basil F, of Dunglass, Burt
Hendryside, J B, Fenton, Drem
Harper, Joseph, Sawdon, Traquent
Hry Captain J G Baird, of Belton,
Dunbar
Hepburn, J, Preston Muns, Prestonkirk
HIPPEN, Sir I L, of Smeiton, 1st
Hippens Robt Muns Prestonkirk
Hope, Harry, Oxwell Muns Dunbar
Hope Henry W, of Luffness, Drem
Hope, James, East Bams Dunbar
Hope, William James, East Bams, Dunbar
Houston, Major, of Clackington, Haddington
Houston, V H, of Beechhill, Haddington
Hume, P H, Dunbar
Hunter, Richard of Thurston, Dunbar
Innes F & Mitchell, of Phantassie, Prestonkirk
Johnston, Alex, North Muns, Ormiston
KINLOCK, Sir Alexander, of Clackington, Burt,
Drem
Kinloch, David A, yr of Gilmerston
Ludlay, L W, Hilla, Dunbar
Lrvine, Jas D, of Minkie, Haddington
McCulloch, D, Bank Agent, North Berwick
McEwen, J, Braidie Farm, North Berwick
McVeb, Wm, North, Haddington
Murraybanks, John, Camptoun, Haddington
McVeb, Chris, Paxton, Traquent
Murray, Alexander, Livery Park, Haddington

Nelson, Charles, Skateraw, Innerwick
 Newton, Captain Hay, of Newton, Haddington
 Park, Thomas B, Springfield, Haddington
 Puntton, F H, Aberlady Mains, Longmiddy
 Richardson, J, Southfield, Haddington
 Riddell, Thomas, Maikle, Prestonkirk
 Riddell, Wm, Cocklaw, Haddington
 Robertson, James F, Newhouse, Drem
 Robertson, Robt, West Barns, Dunbar
 Scott, Alexander, Newtonlees, Dunbar
 Scott, C, Newtonlees, Dunbar
 Scott, G R, Commercial Bank, Dunbar
 Sharp, John J, Ewingston, Gifford
 Shurriff, David, Murrton, Drem
 Shurriff, Samuel D, North Berwick
 Simpson, Thos, West Byres, Ormiston
 Smith, Andrew, Longmiddy
 Smith, Chas, Whittinghame, Prestonkirk
 Smith, D W D, North Elphinstone, Tranent
 Smith, E Hedley, Whittinghame, Prestonkirk
 Smith, William, Greenhead, Pencatland
 Stein John Broomhouse, Dunbar
 Stodart, William Wintonhill, Tranent
 Stuart, A C, of Eaglescarmie, Haddington
 Swinton, P Burn, Holy N Bank Gifford
 Sydeserff, T Buchan, of Ruchlaw, Prestonkirk
 Taylor, J B, Seton West Mains, Prestonpans
 Turnbull, P, Little Pinkerton, Dunbar
 Turnbull, Walter, Tynemont, Ormiston
 TWYEDDALE, The Marquis of, Yester, Haddington
 Tweedie, Alexander, Coats, Haddington
 Wallace, John, Hailes, Haddington
 Welsh, Alex, Waighton, Prestonkirk
 WEMYSS, and MARCH, The Earl of, Gosford, Longmiddy
 Wylie, Alexander, Bolton Haddington
 Wylie, Alex, Thurston Mains, Dunbar
 Wylie, James Innerwick, Dunbar
 Young, D S, Bonnington, North Berwick
 Yule, Edward, Balgona, North Berwick

INVERNESS

ABINGER, Lord, Inverlochy Castle, Kingussie
 Alston, James M, Beaully
 Allan, William, Clury, Grantown
 Anderson, James, Solicitor, Inverness
 Baillie, A C, Dochguroch, Inverness
 Baillie, James E B, of Dochfour, Inverness
 Baird, John, of Knoydart, Inverie House, Ormsay, Skye
 Baxter, Frederick, Seedsman, Inverness
 Bethune, Angus, Seafield, Inverness
 Burne, Alex, Wellhouse, Beaully
 Biscoe, T Ramsay, of Newton, Inverness
 Black, George, Banker, Inverness
 Black, Robert, C E, Inverness
 Blair, Patrick, Sheriff Substitute, Inverness
 Bower, A L, Strathard House, Broadford
 Brougham, Dr Jas P, Culduthel House, Inverness
 Cameron, Donald, of Lochiel, Auchnacarry, Fort William
 Cameron, John, Fassifern, Fort William
 Campbell, A D, of Kilmartin, Glen Urquhart
 Carruthers, Robert, Courier Office, Inverness
 Chisholm, Duncan, 42 Waterloo Place, Inverness
 Chisholm John, Ironmonger, 8 Church Street, Inverness
 Cran, John, Kirkton, Bunchrew, Inverness
 Cumming, James, Allanfearn, Inverness
 Davidson, Hugh, of Cantyay, Fort George Station
 Davidson, Robert, 29 Academy St, Inverness

Davidson, Samuel, Gussachan, Beaully
 Dick, W G, Horse Hirer, Inverness
 Dougall, Andrew, Railway Manager, Inverness
 Duff, George Smyttan, Heatherley, Inverness
 DUNVORE The Earl of, Isle of Harris
 Elliot, Matthew, Flesher, Inverness
 Forbes, Duncan, of Culloden, Inverness
 Fraser, Alexander, Commercial Bank, Inverness
 Fraser, Alex, Solicitor, Inverness
 Fraser, David, Dalneigh, Inverness
 Fraser, Evan Baillie, Redburn, Inverness
 Fraser, Hugh, Balloch of Culloden, Inverness
 Fraser, James, C E, Inverness
 Fraser, James, Mauld, Beaully
 Fraser, Captain John, of Balm
 Fraser, William, Annfield, Inverness
 Galhe, C R, Balfeary, Inverness
 Grant, Charles, Hazelbrae, Glen Urquhart
 Grant, John Lown Erchless, Beaully
 Grant, Major Wm, of Drumblae, Glen Urquhart
 Grant Wm R, Solicitor, Inverness
 Gregory, A A, Corn Merchant, Inverness
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 Murray Robert G, of Spittal Bldg
 Napier John S, of Lettium Strathaven
 Neilson, William, Bank of Scotland, Bells
 hill
 Nimmo Thomas Lawhead Path
 On Wm, 40 West Nile Street, Glasgow
 Pink James Dechmont Combustion
 Paterson G B, Drum Urban, Thimketon
 Paterson James jun., Over Abington, Abing
 ton
 Paterson, James of Curmacoup, Douglas
 Paterson Robert of Ruthwood Bldg
 Paterson, Wm Grange Thimketon
 Paton James, Glasgow, Abington
 Pearson, Andrew A, of Springhill Cuthke
 Penick I, Springhill, Stn, Shotts
 Pettigrew Jas, Cliftonhill House, Coatbridge
 Pollock, W, 1001 Wm, Glasgow
 Pringle, John Leslie Wm, Douglas
 Rennie M G, 6 Parkview Terrace Glasgow
 Rattray, Patrick, C A, Graham House,
 Glasgow
 Reid, J E, of Willowflat Ruthven, Len
 Reid, F B, jun, Willowflat Ruthven, Len
 Reid, William, 140 St Vincent Street, Glas
 gow
 Rennie, David, 72 W'Alpine Street, Glas
 gow
 Ritchie, John Newbiggin, Wm, Cunnwath
 Ritchie, John Whiteville, Bldg
 Robb Geo, 11 Garmston Street, Glasgow
 Robertson, Lieut Col James C, Whitefield
 Govan
 Robson, Andrew, 101 St Vincent Street,
 Glasgow
 Rodger, Hugh, 15 Bank Street, Airdrie
 Russell, George, Cunnwath
 Russell James, Monimil Bank, Airdrie
 Russell, James, Allanton Hamilton
 Sandford, David S, 40 St Knoch Square,
 Glasgow
 Sanderson, James, West Yard Houses, Carn
 wath
 Sandilands, R, South Cumberhead, Lesma
 haw
 Scott, James, Borton Bishopnugs
 Scott, Jas Duffell Cunnwath, Wishaw
 Scott J Springfield House Tddingston
 Scott, W, Borton Bishopnugs
 Shirlaw, James, Cuffin Motherwell
 Shiel, George, Royal Bank, Wishaw
 Smellie, William, Catharna, Wishaw
 Smith, Alex, Westbourne, Govan
 Smith, Andrew Milnwood Lanuk
 Smith, C, 36 Howard Street Glasgow
 Smith C, Sun Laundry, Glasgow
 Smith, H, J Kilnside Terrace (North),
 Glasgow
 Smith, James, Broomhill, Patrick
 Somerville, G I, Muirhouse, Cunnwath
 Somerville, Wm Merchant Glasgow
 Spence John, Newton Farm Newton Glasgow
 Spencer, A, 160 Hope Street Glasgow
 Stark, W, 103 Wiff Street, Glasgow
 Steel, John Lochwood Gartnash
 Stevenson, Wm, Lochgort Bishopnugs
 Stewart D W, Central, Lanuk
 Stewart, James 41 Oswald Street, Glasgow
 Stewart, John, Funnside, Strathven
 Stewart, R E, of Muirdestoun, Newmans
 Stodart, David, Banker, Lanuk
 Storey, Rev A R The Manse, Carmunnock
 Strong, J, High Cawburn, Strathaven
 Swann, James, Colcluthill, Douglas
 Tennant T, of Priestgill, Strathaven
 Tervit, John, Boat, Thimketon

Thomson, James H, 14 Great George Street
 Glasgow
 Thomson John 41 Mitchell Street, Glasgow
 Thomson S M, Merchants, Lanuk
 Thomson Wm, Smith Street, Kinning Park
 Glasgow
 Thomson W G, 41 Mitchell Street, Glasgow
 Thorburn Robert Stonehill Thimketon
 Todd Andrew, 145 St Vincent Street, Glas
 gow
 Turnbull Gray, Merchant Glasgow
 Urie John, 66 Washington Street Glasgow
 Vere J C Hope of Blackwood Leamthagow
 Waddell, J, Ardieshill, New Monkland
 Walker, Samuel, Willowhill (Carmunnock)
 Wallace, Hugh, 30 Havelock Street Glasgow
 Wallace, John, Stonelaw, Ruthven, Len
 Wallace, W (John Wallace & Sons) Graham
 Square Glasgow
 Wainock A, Leyswards Bishopnugs
 Watson, Arthur, Overlea Bushy
 Watson, John 205 West George Street, Glas
 gow
 Watson John of Funnick Hamilton
 Watson Robert Cultivators Bldg
 Watt, John, Drumgilly, Lanuk
 Watt Robert, Solicitor, Ardies
 Watt, James, Smithlands, Lanuk
 Wen, E, Smithlands Cottages, Lanark
 Wen W C, 10 Prince Street Glasgow
 Whyte, D, 326 Duke Street, Glasgow
 Williams Robert, The Green Wishaw
 Williamson, Alex, Chastell, Weston,
 Bldg
 Williamson, James Greenhead Wishaw
 Wilson Andrew Dalzell Motherwell
 Wilson, W, Water Meenans Abington
 Wingate Andrew, Castlehill, Wishaw
 Wraze, Charles, 4 Stockwell Street, Glasgow
 Young, Robert, 24 St Vincent Crescent, Glas
 gow
 Young, Wm, Waterbank, Carmunnock
 Yull, Archibald, Netherside, Strathaven

LINLITHGOW.

Allan, J, Corn Merchant, Boness
 Allan, James jun, Boness
 Arnott, J, Nidder Mains Winchburgh
 BAILLI, Wm William, of Polkemmet, Bart,
 Whitburn
 Bartholomew, J, Langton House, Winchburgh
 Bartholomew, John Hunter Mains Winchburgh
 Borthwick, John V F Kirkliston
 Brash, James, Hallyards Kirkliston
 Brack J I, Overton, Kirkliston
 Brown, George, Coumaland Bathgate
 Brown, James, 1st W Whitburn 1st
 Elyca James, Last Whitburn, Whitburn
 Cuthill, Henry, of Change, Boness
 Cuthill, J, Boness Uphall
 Chapman, James, Lilliesleaf Will Bathgate
 Davidson, George, Walton, Linlithgow
 Davidson, Alexander, Faski Dalmeny
 Davidson George, Almondhill Kirkliston
 Fleming, George, Hugh Kirkliston
 Fletcher, John, Dolphington, Cramond
 Bridge
 Gardner, Robert, Whitburn
 Gillespie, James, 1st, Cramond Bridge
 Gillon, Col, of Wallhouse Bathgate
 Glen, Robert R, Bunker, Linlithgow
 Glendinning, Alex, New Mans, Kirkliston
 Glendinning G P Dalmeny Park, Edinburgh
 Glendinning, P, Dalmeny Park, Edinburgh
 Graham, William, Wheatlands, Cramond
 Bridge
 Grieve D, Blackberry Hill, Whitburn
 Hare, Lt Col Philpston House, Winchburgh

Hill, John, Carlowie, Cramond Bridge
 Hog, Thos. A., of Newliston, Kirkliston
 HOPEFOUN, The Earl of, Hopetoun House,
 South Queensferry
 Johnston, John, Banker, Bathgate
 Law, James, East Mains, Broxburn
 Learmonth, G. Gray, North Bank, Bo'ness
 Leslie, James, Bochall, Linlithgow
 M'Kinlay, John, Hardhill, Bathgate
 M'Lagan, Peter, of Pumpherston, M.P.
 MacNab, John, Glenmavis, Bathgate
 Masson, Rev. Alex., The Manse, Kirkliston
 Meikle, John, Grouftow, Linlithgow
 Meikle, Wm., East Bonhard, Linlithgow
 Melville, G. F., Sheriff-Substitute, Linlithgow
 Mitchell, Geo., Broxburn Park, Broxburn
 Mitchell, Wm., Dechmont, Uphall
 Morrison, J., West Dalmeny, Dalmeny
 Orr, James, Hill, Whitburn
 ROSEBERRY, The Earl of, Dalmeny Park,
 Edinburgh
 Rough, Robert, Wellford, Droxburn
 Russell, Alex., of Mosside, Bathgate
 Russel, James, Dundas Castle, Queensferry
 Shields, James, Byers, Bathgate
 Shields, John, Auctioneer, Linlithgow
 Stewart, Captain R., of Westwood, West
 Calder
 Stewart, G. M. F., of Rinny, Linlithgow
 Stewart, John, West Briggs, Cramond Bridge
 Waddell, William, Netherton, Whitburn
 Walker, Robt. Houston, of Hartwood, West
 Calder
 Young, Wm., Whitelaw, Bathgate

NAIRN.

Anderson, Robert, of Lochduh, Nairn
 Baillie, Major-Gen. Duncan, Lochloy, Nairn
 Brodie, Cathness, The Drumin, Nairn
 Cameron, Dr James Angus, of Firhall, Nairn
 CAWDOR, The Earl, Cawdor Castle, Nairn
 Clarke, Lieut.-Col. M. A., Acherside, Nairn
 Crawford, John, Nairn
 Donaldson, H. T., Banker, Nairn
 Fraser, Robert, Brackla, Nairn
 Fraser, William, of Kilmuir and Newton,
 Nairn
 Gordon, James G., Milton of Kilravoch,
 Nairn
 Hehlen, A. C., Nairn
 Joss, John, Budgate, Cawdor
 M'Intyre, Donald, Meikle Kildrummie,
 Nairn
 Mackilloan, P., Achagour, Nairn
 Mackussack, Charles, Nairn
 Macpherson, George Gordon, Huntly Hall,
 Nairn
 Mather, John Arres, Delnies, Nairn
 Mill, George, Piperhill, Nairn
 Rose, Campbell, Flenas, Nairn
 Rose, Major James, of Kilravock, Fort-
 George Station
 Stables, W. A., Nairn

ORKNEY AND SHETLAND.

ORKNEY.

Balfour, Colonel David, of Balfour and
 Trenahie
 Birse, John, Summerfield, St Ola, Orkney
 Burroughs, Lieut.-General F. W. Traill, G.B.,
 of Bousay
 Cromarty, William, Widewall, St Margaret's
 Hope
 Drever, James, Swanny House, Firktown
 Forester, Wm. I., Swanbister, Kirkwall
 Gibson, John, Langskail, Rousay

Johnston, James, junior, Orphir House,
 Orphir
 Learmonth, Robert, Westness, Rousay
 Learmonth, D. H., Housebay, Stronsay
 Leitch, Simon, Elwickbank, Shapinsay
 Reid, Alfred, Brnebuster, Kirkwall
 Scarth, Robert, Binnscarth, Kirkwall
 Scatter, William, Saviskail, Rousay
 Sinclair, Thomas, Whitehall, Stronsay
 Stephen, Donald, Northtown, Birsay
 Stevenson, William, Holland, Stronsay
 Thomson, John, jun., New Holland, St Marys
 Holm
 Traill, R. M., Hobbister, Orphir
 Traill, Thomas, of Holland, Kirkwall
 Watt, W. G. T., Kierfield House, Stromness

SHETLAND.

Anderson, Gilbert, Hillswick, Lerwick
 Bruce, John, of Sumburgh, Lerwick
 Edmondston, Mrs. of Bunes, Unst, Ler-
 wick
 Hamilton, W. Cameron, Baltasound, Unst
 Hamilton, Zachary Macanlay, Symbister
 Jaffray, James, Belmont, Unst
 Manson, Anderson, Laidirth, Lerwick
 Sandison, Alexander, Uyasound, Unst

PEEBLES.

Anderson, John, Cramalt, Coppercleuch,
 Selkirk
 Ballantyne, Wm., Wormiston, Eddleston
 Berestord, J. G. M., of Machiehill
 Black, William Connel, of Kallzie, Peebles
 Blackwood, Alex., Stobo Mill, Stobo
 Brown, Wm., Parkgatestone, Biggar
 Cairns, John, Winkston, Peebles
 Carmichael, G. H. G., Castle Craig, Dol-
 phinton
 Carmichael, T. D. Gibson, yr. of Skirling
 CARMICHAEL, Sir William H. Gibson, of
 Skirling, Bart., Castle Craig
 CECIL, Lord Arthur, Orchard Mains, Inner-
 leithen
 CECIL, Lord Lionel, Orchard Mains, Inner-
 leithen
 Deans, William, The Glen, Innerleithen
 Dickson, Professor Alex., M.D., of Hartree,
 Biggar
 Dickson, W. L., Drumelzier Haugh, Biggar
 Dyson, F. W., Peebles
 ELIBANK, Lord, Minden, Eddleston
 Erskine, Rear Admiral James E., of Venlaw,
 Peebles
 FERGUSON, Sir James R., of Spitalhaugh,
 Bart., West Linton
 Fletcher, D. M., Drumelzier Place, Biggar
 Forrest, George, Ediston, Stobo, Peebles
 Forrest, T. M., Ediston, Stobo
 Frier, Matthew, Kidston Mill, Peebles
 Gordon, Charles, of Hallmyre, Lamancha
 Gracie, Chas. A., Easter Haprow, Stobo
 Greeshields, David, Garvaid, Dolphinton
 Harper, J., Traquair Mains, Innerleithen
 HAY, Sir John Adam, of Haystoun, Bart.,
 Kilmendows, Peebles
 Lindsay, Jas., Wester Haprow, Stobo
 Lindsay, Thomas, Flenington Mill, Noble-
 house
 Linton, Simon, Glenrath, Manor
 MacKenzie, C. J., of Portmore, Eddleston
 McIntosh, J., of Lamancha, Lamancha
 M. WELL-STUART, Hon. Henry Constable,
 Traquair, Innerleithen
 M. ROSE, Patrick, West Loch, Eddleston
 M. TONGHER, Sir G. Graham, of Stanhope,
 Bart., Stobo Castle, Stobo

Montgomery, John B H, Stobo Castle, Stobo
 Muir, G W, Kirkhouse, Triaquan
 Murray, J Wolfe of Cringletie, Peebles
 Murray, W J, Mailingland, Peebles
 Paterson, J, South Shipfield, West Linton
 Paterson, John, Skirling Mauns, Biggar
 Ritchie, G D, Cloverhill, Biggar
 Ritchie, Robert, Cloverhill, Biggar
 Ritchie, Wm, jun, Lyne, Stobo
 Slater, Andrew, Haystoun, Peebles
 Stodart, J A, Portmore, Eddleston
 Stodart, Thomas Tweedie, of Olver
 TENNANT, Sir Chas, of the Glen, Bart,
 Innerleithen
 Thom, Alex, Chapelhill, Peebles
 Thorburn, M G, of Glenormiston, Inner
 leithen
 Tweedie, A G, Hearthstone, Broughton,
 Peebles
 Tweedie, James, of Quarter, Biggar
 Watson James, Blythbank, Dolphinton
 Williamson, Miss Katharine Isabella, of
 Cuddona, Peebles
 Wilson, J F, Newton Villa, Peebles
 Wilson, James, Burnetland, Biggar
 Wilson, James, West Mauns, Dolphinton
 Woddrop, W A, of Garvaid, Dolphinton

PERTSHIRE—Eastern Division

Allan John, Culthill, Dunkeld
 Anderson, Alex, Berryhill, Dundee
 Anderson, Archd, Turnbuhl, Perth
 Anderson, Dr Arthur, C B, Sunnybrae, Pit
 lochry
 Anderson, D A, of St Fmk & Burnside,
 Blairgowrie
 Anderson, John, Royal Hotel, Blairgowrie
 Anderson, John A, St Albans, Perth
 Anderson, Peter, Dunesaves, Forthgal
 Anderson, Robert, Middlebank, Errol
 Anderson, Robert, Donnamuch, Pitlochry
 ATHOLE, The Duke of, K T, Blair Castle,
 Blair Athole
 ATHOLE, The Duchess Dowager of, Dunkeld
 Baird, Arthur E, Buchwood, Pitlochry
 Ballingal, A H, W S, Perth
 Beattie, James, Rockdale Cottage, Perth
 Bell, Edwin W, Russe, Forgandenny
 Bell, James H, of Rosie, Forgandenny
 Bell, William, Kennacool, Dunkeld
 Bisset, Thomas S, Blairgowrie
 Black, Captain, of Balgowan, Perth
 Black, George, Victoria Street, Perth
 BREAD ALBANE, The Marquis of
 Brock, Wm, Keithock Mauns, Coupar Angus
 Brown, Peter, Milton of Luncarty, Redgorton
 Bryden, John, Newmans, Stone, Perth
 Bullough, John, of Meggermie, Aberfeldy
 Butter, Albert, Union Bank, Perth
 Cairns, Robert, Bertha Park, Perth
 Calder, James, of Arlunne, Forgandenny
 Cameron, Duncan, Kinloch Rannoch
 Cameron, J C, of Garrows, Dunkeld
 Campbell, Duncan, Stronmuch, Aberfeldy
 Campbell, J L, of Achalader, Blairgowrie
 Campbell, Thomas, Croftness, Aberfeldy
 Chalmers, James, Smelhill, Stanley
 Chalmers, John, Westwood, Stanley
 Christie, Gilbert, Auchlyne, Killin
 Chrysal, George, Engineer, Perth
 Clark, Robert, Taybank House, Errol
 Conacher, P M, Gallin Cottage, Aberfeldy
 Cox, Wm, of Snaigow, Dunkeld
 Crawford, Andrew, Tayhill, Perth
 Crawford, William, Balgavie, Perth
 Cresser, Alexander, Traithur, Killin
 Cresser, Donald, Morenish, Killin
 Cresser, John, Drumathery, Dunkeld
 Dack, Wm, of Tullymet, Ballinlurg

Dickson, John, W S, Greenbank, Perth
 Doe, John, Errol
 Douglas, Alexander, Guay, Ballinlurg
 Douglas, E O, of Killiechassie, Aberfeldy
 Dow, David, Balmanno Bridge of Iarn
 Dow, David, jun, Balmanno, Bridge of Earn
 Drummond, J M, of Meggernie, Errol
 Drysdale, A L, Kingswood, Murthly
 Drysdale, John, Grange of Elcho, Perth
 Duff, James, Freeland, Bridge of Earn
 Dunn, William, Kenmore Mauns, Aberfeldy
 Farquharson, Alex, Greenbains, Coupar
 Angus
 Fell, John Duncan, Flesher, Blairgowrie
 Fenwick, James, Factor, Redgorton
 Ferguson, James, Balunie, Coupar-Angus
 Ferguson, Thos, Kinlochry, Coupar Angus
 Ferguson, W S, Pictston Hill, Perth
 Ferguson, Donald, Dalcaup, Ballinlurg
 Fergusson, S R, of Middlehugh, Pitlochry
 Fisher, Donald, The Hotel, Pitlochry
 Fleming, Rev A, of Inchyra, Hamilton
 House, Perth
 Forbes, Alexander, Stalochie, Dunkeld
 Forbes, Charles W L, Aberfeldy
 Fraser, John M, Perth
 Fullarton, James, Balgove, Coupar Angus
 Galloway, Alex, C B, Aberfeldy
 Galloway, Thos T, Carme, Glencarse, Perth
 Gammell, Colonel J H H, of Lethendy,
 Meikleour
 Geekie, Peter, Barclay Hill, Perth
 Geekie, R, jr of Baldowie
 Gibson, Charles, Pitlochry
 Gillespie, James J, St Colmes, Ballinlurg
 Gloag, Wm Elms, of Kincauney, Dunkeld
 Gold, Joseph, Murthly Farm, Perth
 Gornie, John, Princes Street, Perth
 Graham, A G Maxtone, jr of Culloquhey,
 Perth
 Graham, J Maxtone, of Culloquhey, Perth
 Grant, John S, Tullymet, Ballinlurg
 Gray, E A Stuart, of Gray and Kinfauns,
 Perth
 Gray, George, of Bowerswell, Perth
 Gray, Jas, Rose Bank New Stone, Perth
 Greig, I, Watson, of Glencarse, Perth
 Grimond, Alex D, of Glenziecht, Blair
 gowrie
 Haggart, Peter, Aberfeldy
 Hart, Andrew, Aberdare, Perth
 Hay, Alex, Master Culmalundie, Perth
 Hay, Colonel Drummond, of Seggieden, Perth
 Heiton, Andrew, Perth
 Henderson, Wm, Milton of Collice, Coupar
 Angus
 Hunter, Patrick, Airdguth, Glencuse
 Hutcheson, Andrew, West Mill, Inchture
 Hutchinson, Alan, Camserney Cottage, Aber
 feldy
 Imrie, James S, Somerset Villa, Perth
 Irvine, Dr Wm S, Pitlochry
 Jameson, Martin, Fernhill, Perth
 Jameson, Melville, Solicitor, Perth
 Jameson, Alex, St Barossa Place, Perth
 Jameson, John, St Barossa Place, Perth
 Johnston, James, Cattle Dealer, Perth
 Johnston, Stewart J, Loanleven, Hunting
 tower, Perth
 Kerr, Patrick Small, of Kindrogan, Pitlochry
 Kennedy, John, Royal George Hotel, Perth
 Kerr, John, Rosie Ochil, Forgandenny
 Kerr, Thomas, Foxhill, Capthorn
 KINLOCH, Sir JOHN G S, of Kinloch, Bart,
 Meigle
 KINNAIRD, Lord Rosie Priory, Inchture
 KINNAIRD, The Hon The Master of
 Kinnear, Chas, Tarsappie, Perth
 KINNOUL, The Earl of, Dupplin Castle, Perth
 Knight, W G, of Jordanstone, Meigle
 Kyd, George, Perth

Leslie, James, Thorn, Blairgowrie
 Leslie Robert C, of Butterfield, Dunkeld
 Leslie, Thomas W, Welton, Blairgowrie
 Livingston, John, Bras of Cluny, Tully
 powrie
 Lowe, Robert, General Agent, Perth
 Lumsden, J D, Huntingtowerfield, Perth
 M'Cash, John, Grum Merchant Perth
 M'Corquodale, William, Jeanie Bank, Scone
 M'Diarmid, Charles A, Rockwood, Killin
 M'Diarmid, Duncan, Camusertich Rannoch
 Macdarmid, Donald, Bank of Scotland, Aber
 feldy
 Macdonald, Archd Burns, Perth
 Macdonald, D, Athole Arms Hotel, Blair
 Athole
 Macdonald, J Comrie Farm, Aberfeldy
 Macdonald, Montague, yr of St Martins,
 Perth
 Macdonald, Lieut Col, Wm Macdonald, of
 St Martins, Perth
 Macdonald, William, of Balmakilly, Blair
 gowrie
 Macdonald, William, Woodlands, Perth
 M'Dougall, John, Goodlyburn, Perth
 M'Dougall, Archd, Ardtilanag Kenmore
 Macduff, Alex, of Bonhard, Perth
 Macduff, Donald, Tomnagraw, Dunkeld
 Macfarlane, David, Needburn, Methven
 Macfarlane, Wm, Welltown, Meigle
 M Gillewie R, Union Bank, Dunkeld
 M Gregor, Athole Eastwood, Dunkeld
 Macgregor, Donald, Middlebridge, Blair
 Athole
 M Greor, John, Ladywell, Dunke'd
 M Insoch, James, Bortlands, Coupat Angus
 MACKENZIE, Sir Alex M, of Delvine, But
 Mackenzie R W R, Stoimonthfield, Perth
 Mackie, J H J, Invermay, Bridge of Earn
 M'Laren, Charles, Cally Lodge, Dunkeld
 M'Laren, John, Retreat House, Scone
 M'Laren, Wm, Pitendown, Meikleour
 M'Leish, Wm, Town Clerk Perth
 M'Leish, Daniel, Wester Keillor, Methven
 M'Leish, G S, Wester Drumtheity, Dunkeld
 M'Leish, James, Byres of Murthly, Perth
 M'Naughton, Alex, Ramony, Kenmore
 M'Naughton, Alex, Killin
 M'Naughton, Wm, Riechip Dunkeld
 M'Niven, A, Innishaven, Killin
 Macpherson, Allan, of Blairgowrie
 Macpherson, Duncan, of Glendole, Kil
 graston, Budge of Earn
 M'Queen James Prince Street, Perth
 M'Whitche, David, Easter Logie, Blairgowrie
 MANFIELD, The Earl of, K T, Scone Palace,
 Perth
 Marshall, James Burt, Luncarty, Perth
 Marshall, Rev Theodore, Coupat Angus,
 Dunkeld
 Marshall, Robert, Toffhouse, Tibbermuir
 Martin, Annew, Lord Provost of Perth
 Matthew, John M, yr of Auchmague, Perth
 Maxwell, William, of Dunavon, Pitlochry
 Menzies, Fletcher Norton Balmakilly, Bal
 linluig.—*Secretary of the Society*
 Menzies, James, Cushieville, Aberfeldy
 Menzies, Dr James, of Pitnacree, Ballinluig
 Menzies, Neil James, yr of Menzies
 MENZIES, Sir Robert, of Menzies, Burt,
 Fuley, Aberfeldy
 Menzies, Robert, Invermay, Aberfeldy
 Menzies, Wm J B Stewart, of Chesthill,
 Aberfeldy
 Middleton, Capt W F, Bellwood, Perth
 Miller, Wm Over Kinnans Perth
 Miller, George, Flawburgh, Brier
 Mitchell, Hugh, Buiker Pitlochry
 Mitchell, James, Fankie, Pitlochry
 Mollison, James Ruthven, Meigle
 Morison, R G Lingrater Eiol

Mundell, Jas P, Auction Mart, Perth
 Munro, Chas, Union Bank, Aberfeldy
 Murray, C A, Laymount, Stanley
 Murray, Thos, Graham, Stenton, Dunkeld
 Murray, W G G, Balfrecks, Aberfeldy
 Nairne, T G, Dunsinnan, Perth
 Nairne, William, of Dunsinnan, Perth
 Ogilvy, Col James W, Rannagilson, Blair
 gowrie
 Ogilvy, Lieut Col R H A Millhill Inchture
 Ogilvy, Lieut Col Thos W, of Ruthven,
 Meigle
 Panton, John, of Dalnagarn and Carsie,
 Blairgowrie
 Panton, William, Maryfield, Blairgowrie
 Paterson, George Frederick of Castle Huntly,
 Longforan
 Paton, Jas, jun Obney, Bankfoot
 Patterson Alex, Henhill Forteviot
 Peattie William, 11 South Methven Street,
 Perth
 Philip Alex, Chapelhill, Logieilmond
 Pirrie, James P, Cornhill, Perth
 Pople, George, Newhouse Perth
 Pople, H W, Royal British Hotel Perth
 Pople J B of Newhouse Perth
 Powrie Archd, Laurwell Perth
 Pullar, Robert of Tyside Perth
 RANVALL Sir James H of Bamff Lieut Alth
 Ratray, Lieut Gen J C, of Craighall, C B,
 Blairgowrie
 Rathay, Dr J C, of Coral Bank, Blair
 gowrie
 RICHARDSON, Sir J T S, of Pitfour, Burt,
 Perth
 Richmond, John Dron, Bridge of Earn
 Richmond, T Hilton, Perth
 Robertson, Mrs sen, of Struan, Rannoch
 Robertson, Alexander Billechin, Ballinluig
 Robertson, Donald, Blackhill Billinluig
 Robertson, E W, of Auchlecks, Blair Athol
 Robertson, James, Blackluig, Dunkeld
 Robertson, J S, of Lathrynte, Ballinluig
 Robertson, J S, yr of Lathrynte, Ballin
 luig
 Robertson, John Auchnahyle, Pitlochry
 Robertson, John, Old Blair Blair Athol
 Robertson, Wm, jun, Two mile House
 Murrayhall
 Robertson, Wm, Potto Merchant, Perth
 Robertson, Wm, Engineer, Perth
 Roy, Thomas, Craigclow, Perth
 Scott James G Hill of Ruthven Perth
 Scott, John, Gullin Cottage, Aberfeldy
 Scrimgeour, Peter, Bulboughty, Perth
 Shields John Bulhouse Castle Perth
 Sibley, James, Goudie, Dunkeld
 Sibley, James, of Dunsinnan, Pitlochry
 Smith, Andrew, Whitefield, Coupat Angus
 Smythe, David M, yr of Methven, Perth
 Smythe, William, of Methven Perth
 Speid, James Kenneth, Blairgowrie
 Stalker, Donald, Forester, Murthly Castle
 Murthly
 Steel, Adam, yr of Blackpuk Perth
 Stewart, D D, of Dalryne Dunkeld
 Stewart, D K, Munday, Aberfeldy, Perth
 Stewart, John, of Billechin, Tullypowrie
 Stewart, Alexander of Market Street, Perth
 Stewart Charles Lighndun, Killin
 STEWART, Sir A Dundas of Grandtully, Burt
 Stewart, Donald, Little Lardie, Meikleour
 Stewart, Duncan, Loth, Bankfoot
 Stewart, D D Castlehill Inchture
 Stewart, James Blair Athole
 Stewart, James, Ruthven Coupat Angus
 Stewart, Jas Pitkelly, St Martins, Perth
 Stewart, J F, Newmill, Stanley
 Stewart, Thomas, Whinniemuir, Perth
 STORMONT Viscount, Scone Palace, Perth
 Sutherland, George, The Peel, Tibbermuir

Talbert, Peter, Glensight, Blunbowrie
Thomson Thos, Caidon, Abernethy
Trotter, Charles, of Woodhill, Blangowrie
Watson, William, Inchcounins, Eriol
Wedderspoon, John, Wallaceton, Bridge of
Earn
Wedderspoon, Thos, Auchmoreer, Perth
White, Dr Francis, Perth
Whyte, Wm, Muirhead, Forquidenny
Wilshon, John, Achain, Killin
Wood, C L, of Freeland, Bridge of Earn

PERTSHIRE—Western Division.

Anderson, Alex, Kippenross, Dunblane
Anderson, James, Inverch, Garmie, Crian-
laich, Stirling
Bellingall, D, Factor, Blandrummond
Buty, Jas W, Duubline
Blair, James, Aberfoyle
Buchanan, Francis W, Leny, Callander
Burns, James C, Fun Tower Crief
Cairns, William, Bcline, Auchterarder
Carnegie, D, of Stronval, Lochearnhead
Carrick, Charles, Baal, Stirling
Carrick, T A, Easter Cambusdrennie, Stur-
ling
Cochran, Wm, Overdale Dunblane
Colquhoun Rev J E, Ledcameroch, Dun-
blane
Cowan, Walter, Blairhoyle, Stirling
Cox, George A, of Invercrossachs, Callan-
der
Cox, James U, Invercrossachs, Callander
Craig, John, Innergeldie, Comrie
Craig, William, Gwydyr House, Crief
Crawford, Thos, Dumawhance, Crief
Cumming, David, Knockcoston, Crief
Curr, Henry, Pitkelloy, House, Muthill
Dayton, Robert, Lochearnhead
Dewar, James, Cannton, Dunblane
Dewhurst, G C, of Theruchil, Comrie
Dodd's James, Allandale, Bridge of Allan
Dow, James, Clathybeg, Auchterarder
Dixon William, Chiffvichter, Crief
Dundas, Chris Henry, Dumra, Crief
Dundas Colin M, Commander R N, of Och-
tertyre
Edington, Peter, Thornhill, Muthill
Finlayson John, Harperstone, Bialo
Fletcher, Angus, Auchtertyre, Tyndrum
Fletcher, Archd, Auchtertyre Tyndrum
Forbes Arthur Drummond, Millaine, Auch-
terarder
Fraser, Wm, Glenhill, Dunning
Gardner Patrick, Newbigen Auchterarder
Gardner, Robert, of Rottarins, Auchter-
arder
Glover, Andrew, Lamrick Castle, Doune
Graeme Robert, of Garvock, Bridge of Earn
Grant, Henry O Ogilvie, Glen Earn, Crief
Greave John, Callander
Greave, Michael Callander
Greave, Robert, Auch Tyndrum
Hilly, John, Dunoch Mills Crief
Hamilton, J B B, of Annprior Callander
Hamilton, John, Conemish, Tyndrum
Hamilton, J B, of Leny, Callander
Hart, William, Pothill, Auchterarder
Howden, John, Nethil Braco, Bialo
Hunter, Major Patrick, of Auchterarder
Jack, John S, Cambusdrennie Stirling
Kay, Wm, Inch Farm, Kincardine on
Forth
King, William, jun, Darne, Doune
Kinross, Andrew, Hungryhill, Dunblane
Kinross, Thomas, Loig, Braco
Kirk, James, Kamknow, Muckhart
Kirkland, Maj Gen, of Western Fordell,
Munthornt

Lee, A H, of Blairhoyle, Port of Montath
M'Alister, Alexander, Muthill
M'Callum, Col Acille, of Braco
M'Callum, James, Blandoch, Crief
M'Callum, Wm R, Biling, Crief
M'Caull, Peter, Dyckdick, Dunblane
Macdonald, John M S, of Monachyle, Loch-
earnhead
M'Dougill, John W, yr of Orchill, Black-
ford
MacLwan, J, of Tur of Enskie, Callander
M'Innes, Duncan, Milton Cottage, Crief
MacIntyre, Donald, Tighnablan, Comrie
Mackie, Peter, East Kirkton, Auchterarder
MacLachlan, James, Doune Lodge, Burn of
Cumbus
M'Lauren, James, Solicitor, Crief
M'Lauren, J, Bras of Monachvuld, Crief
MacLean, Duncan, Belnollo, Crief
M'Murich, Peter, Glen Alln, Dunblane
M'Nab, John, Bicklin, Callander
M'Naughton, Robert, of Cowden, Comrie
M'Naughton, John, Inverlochlang, Bal-
quhadder
M'Queen, J, of Bounhapple, Thornhill, Stu-
ling
M'Rosty, James, Solicitor, Crief
Menzies, William, Kenlato, Crianlaich
Stirling
Miller, David, Corchbuilder, Crief
Miller, James, Mills of Torr, Blandrum-
mond
Miller, Hew, Newstead, Crief
Miller, John, Lochind, Crief
Moray, C 9 H, Drummond, of Blandrum-
mond, Stirling
Moray, Lieut Col H D, yr of Blandrum-
mond, Stirling
Morgan, James, East Gogar, Blairlogie
Morrises Stirling, J M, Gogar House,
Stirling
Morrison, John, Carse of Trowan, Crief
Murdock, John, Bur, of Gartnacaber, Bland-
rummond, Stirling
Murray, Anthony G, of Dollenis, Crief
Murray, David, Dumra, Crief
Murray, John, Munneiston, Thornhill, Stu-
ling
MURRAY, Sir Patrick Keith, of Ochtertyre
Baird, Crief
Paterson, John, Kirkton, Tyndrum
Raitt, James Culric Crief
Raid, Wm M David, Pittentran, Crief
Robertson, David, Allan Hill House, Dun-
blane
Robertson, D G, of Torrie Callander
Rollo, Lord Dumach House, Dunning
ROLLO The Hon, The Master of
Rollo, James Rostmount, Dunning
Ross, James E, Abacunny, Crief
Russell, Archibald, Kilbride Castle, Dun-
blane
Sharp, James Viewfield, Blackford
Sharp, John, South For Crief
Sharp, Peter, Luchill, Blackford
Sheppard, Rev H A G, of Bednock
Sheiff George jun, Glenyit, Invermud
Spier, R T A, Culdesa Castle, Muthill
Stark, M C, Western Burn, Doune
Stewart, Duncan, Callander
Stewart, Duncan, Monachyle, Callander
Stewart, John, Bocharlie, Callander
Stewart, Joseph, Crunrich, Stirling
Stirling, James, Dunduff, Braco
Stirling Patrick, of Kippendavie, Dunblane
Stirling, T Graham, of Stronwan, Crief
Thomson, Robt, Burnbank, Blandrummond
Thomson, Samuel James, Doune
Wallace, John, of Glassengall Dunblane
Waters, Thomas, Glenapple, Lochearnhead
Williamson, Col D R, of Lawers, Crief

Wilson, Alexander, Alford House, Dunblane
Wilson, John, Lecropt, Bridge of Allan
Young, Alexander, Keir Mains, Dunblane
Young, Wm. S., Keir Mains, Dunblane

RENFREW.

Alexander, P. D., Bridge of Weir
Allan, David, M.R.C.V.S., Clarkston, Busby
Bartlemore, William, Solicitor, Paisley
Blair, James, Bankfoot, Inverkip
BLANTYRE, Lord, Erskine, Glasgow
Brown, A. C., Gledstane Park, Bishopton
Brown, Peter, Craigton, Bishopton
Byrne, David, Abbots Inch, Paisley
Burns, J., of Castle Wemyss, Greenock
Caldwell, Hugh, of Brues, Killbarchan
CAMPBELL, Lieut.-Col. Sir A. C., of Blyth-
wood, Bart., M.P., Renfrew
Cattanach, A., of Auchintorlie, Paisley
Clark, James, Burnside, Mearns
Clark, Wm., Netherlea Farm, Cathcart
COCHRANE, The Hon. Thomas
Colquhoun, J., Cokerhill, Pollokshaws
Crawford, John W., Greenock
Cross, Alex., jun., Eastbank House, Lang-
bank
Cross, David, Eastbank House, Langbank
Crum, Alex., of Thornliebank, Glasgow
Cunninghame, J. C., of Craigends, John-
stone
Ferguson, A. R., Writer, Neilston
Ferguson, Peter, Rock Cottage, Renfrew
Fleming, Wm., Fulwood Mains, Linwood
Gillies, William, Writer, Pollokshaws
Gilmour, Matt., Town of Inchinnan, Paisley
Glegg, J., Factor, Milliken House, John-
stone
Gordon, John, of Aitkenhead, Cathcart
Hardie, E. W., Locher House, Bridge of
Weir
Herron, W., Town-Clerk, Renfrew
Holm, John, Jaapston, Neilston
Houston, Geo. L. of Johnstone, Johnstone
Howie, William, Finnochbog, Inverkip
Hunter, James, Copnashill, Glasgow
Jackson, Jas., Carside, Busby
Jamieson, Wm., Tishnamara, Wemyss Bay
Lang, Alex., of Burtinckfield, Bridge of
Weir
Lang, Alex., Garneyland, Paisley
Locke, Matthew, Arthurlie, Barrhead
Lothian, M. J., Glenlora, Lochwinnoch
Love, Alex., Margaret's Mill, Kilmaccolm
Macdonald, John, Portfield, Renfrew
Macdowall, H., of Garthland, Lochwinnoch
McEwen, John, of Glenlora, Lochwinnoch
Macfarlan, Alex., 27 Palmerston Buildings,
Greenock
McKie, H. B., Freeland, Erskine
McLachlan, Colin, Drums, Greenock
MacPhedran, J. M., of Craigiet, Bridge of
Weir
MacTavish, D. A., Solicitor, Johnstone
Mather, Wm., Kirkhill, Newton Mearns
Maxwell, William Hall, of Dargavel, Bishop-
ton
Myles, James, Deanside, Renfrew
Park, Walter, Hutton, Bishopton, Erskine
Paterson, James, 32 Eldon Street, Greenock
Pelle, H. R. B., Mansion House, Greenock
Pollock, John, Greenlaw, Mearns
Pollok, John of Blackhouse, Mearns
Pottie, Alexander, V.S., Paisley
Ramsay, John, Butcher, Killbarchan
Reid, Robert, Writer, Lochwinnoch
Richardson, David, of Hartfield, Greenock
Richardson, George, Linwood, Paisley
Riddell, David, Blackhall, Paisley

Robertson, J., West Mitchelton, Lochwin-
noch
Robinson, Archibald, M.R.C.V.S., Greenock
Salmon, J., The Linn, Johnstone
Scott, A., 24 Mearns Street, Greenock
Scott, J., Farnart House, Greenock
Scott, James D., Ryeress, Linwood
Scott, Robt. Sinclair, Craigievar, Wemyss-
Bay

Steele, Robert, Greenock
STEWART, Sir M. R. Shaw, of Greenock and
Blackhall, Bart., Ardgowan, Greenock
Stodart, G., Netherton, Newton Mearns
Taylor, William, Park Mains, Inchinnan
Thomson, John, Prospect Hill, Cathcart
Wilson, James, Bughall, Houston
Wilson, John, Erskine, Bishopton
Wilson, Robert, Manswrae, Killbarchan
Young, R. C., Netherfield, Paisley

ROSS AND CROMARTY.

Adam, Aeneas, Humberston, Dingwall
Allan, William, Drummondreuch, Ferrintosh
Conon Bridge
Anderson, T. A., Ballachraigan, Ainess
Arms, Walter, Fodderty, Dingwall
Bethune, Murdo, Brae, Dingwall
Boden, W. F., Scotsburn, Parkhill
Brown, Stephen, Killham, Lochalsh
Brown, Rev. W. L. Wallace, The Manse,
Ainess
Cameron, Archd., Killen, Avoch
Cameron, Colin M., Dalnakyie, Munlochy
Cameron, Duncan, Banker, Tain
Cameron, Duncan, Fettes, Inverness
Catiey, W. E., of Edderton, Tain
Cruickshank, George, Ardmore, Tain
Darroch, Duncan, of Gourrock Torridon,
Achnasheen
Davidson, D. H. C. R., of Tulloch, Ding-
wall
Douglas, Thomas, Mains of Rhyndie, Fearn
Douglas, William, Arbol, Fearn
Fleming, David G., Ardullie, Dingwall
Fletcher, J. D., of Rosehaugh, Avoch
Forsyth, John, Auchoylie, Parkhill
Fowler, Henry M., of Baddery, Fortrose
Fowler, J. A., yr. of Braemore
Fraser, John G., Easter Barichie, Fearn
Gibson, Rev. John, Avoch Mains, Avoch
Goodbrand, James H., Culnaha, Nigg
Gordon, J. A., of Arabhella, Nigg
Gordon, John, Dalnuechy, Fearn
Grant, George, Pollo, Invergordon
Gunn, William, Strathpeffer, Dingwall
Hall, Andrew, of Calrossie, Nigg Station
Hall, George Ross, Invergordon
Hall, John, Tomich, Invergordon
Henderson, Jas., Culcairn, Invergordon
Henderson, John, Factor, Fortrose
Henry, Matthew, Ankerville, Nigg
Inglis, George, of Newnour, Invergordon
Irvin, George Forbes, Nigg
Jackson, Major Randle, of Swordale, Evanton
Kelman, William, Balnagore, Fearn
Littlejohn, Alex., of Invercharron, Arday
MacDonald, A. S., Sunnyside, Invergordon
Macdonald, Donald, Culcraggie, Ainess
MacGregor, James G., Fearn
MacIntyre, Robert, St Martins, Conon
Bridge
McIntyre, P. B., Mains of Findon, Conon
Bridge
McIntyre, Wm., Dalnavie, Ainess
Mackay, Henry, Shandwick Mains, Nigg
Mackay, William, Brucefield, Portmahomack
Mackenzie, Andw., Dalmore Distillery
Ainess

Mackenzie, Colin Lyon, of St Martins, Brae
lan, well, Invergordon
Mackenzie, Sir J D, of Statwell, Bart,
Dingwall
Mackenzie, James Fowler, of Allangrange,
Munlochy
Mackenzie, Sir Kenneth S, of Garloch,
Bart, Canon House
Mackenzie, Rodrick G, of Flowerburn,
Fofrose
Mackenzie, Thomas of Ork, Beaily
Mackenzie, Wm, Delny, Delny Station
Mackenzie Wm, Kinnairdie, Dingwall
Maclean, Rodrick, Ardross, Alness
MacLennan, Alex, Leraness, Lochalsh
MacLennan Donald Hilton, Muir of Ork
Macleod, John, Bulnagowan Arms Hotel,
Ardgay
Macleod R B Ennes of Cadboll, Inver-
gordon
MacRae Donald Moutavie, Alness
MacRae Sir Kenneth J, of Ardross, Bart,
Alness
Matheson, William, Newton, Evanton
MIDDLETON Lord Applecross Lochcarron
Middleton, A A, Rosfarn, Invergordon
Middleton, George Cornon, Dingwall
Middleton, Jon, Davidson Invergordon
Middleton Jon, Clay of Allan, Fearn
Mitchell, Andrew, Drumderit, Inverness
Mitchell, Andrew Ratan House, Lochalsh
Monro, David of Allan, Tain
Mundell, Wm, Muir of Ork
Mundell, W G, Inverlul, Lochbroom
Munro, Alex, Ballintraid, Invergordon
Munro, He to, of Foulis
Munro, John of Lemlar, Dingwall
Murdock, James, Dyne Mains, Inverness
Murray, Charles, of Locharron Dingwall
Murray, D, Grunrud, Poolewe
Murray, William Kileo, Killeunan
Paterson, Wm G, Ork, Invergordon
Peterkin W, Dunglas, Conon Bridge
Prie, A G, of Lecknalm Ulspool
Preston, W C, Auchonachie Lodge, Muir of
Ork
Reid, N, New Kelso, Stratherron, Ross
shire
Robertson, Dr C, Auchtercurn Garioch
Robertson, Chas, of Kenderae, Invergordon
Robertson, J hn, Fearn
Robertson, Peter, Achfity, Dingwall
Ross, D G, Merchant, Dingwall
Ross, David, Binker, Dingwall
Ross, George, Merchant, Dingwall
Ross, James, Balhian, Eddicton
Ross John, Menkie Tarral, Fearn
Sellar, P, Plenderleith, Hartfield Lun
Smith, Alexander P, Munlochy Fum, Mun
lochy
Warrand, Major A J C, Ryefield, Fum
tish
Watson James Bilmrears, Lochalsh
Young, James, Calbuil Learn

ROXBURGH.

Aitchison Wm, Luthope, Hawick
Alexander, George, Easter Lilliesleaf, St L
well
Anderson Chas, Royal Bank, Jedburgh
Ballintyn, David, Shawe, Newcastleton
Ballingill George, Clirlaw, St Boswells
Barrie, James, Huden Mains, Jedburgh
Beattie John, Brudie, Newcastleton
Bell, Wm Scott, of the Wall, Hawick
Blackie, Wm L, Holyeian, St Boswells
Bathwick, A H, Luthayde Lodge, Melrose
Boyd, John P, of Chirytrees Kelso
Boyd W B Eldonside, Melrose

Broad, Anthony, Eilenside Road, Kelso
Brodie, J, Southbank Bowdon St Boswells
Brown, J, Fast House, Melrose, Galashiels
Brown, James, Lund Stewart, Floors,
Kelso
Brunton James, Broomlands, Kelso
Burn, John, Ednam Kelso
Caldar, Adam, Hatherburn, Kelso
Caldar, Francis, Yetholm Muns, Kelso
Carre, T A B, of Civecasario, St Boswells
Cavenhill John, Jedneuk, Jedburgh
Chaiton, M, Jun, Brownlelanaws, Jcl
burgh
Clark S T, Chapelhill, Hawick
Clay, John, Kerthester, Kelso
Cochran A L, of Kingsnawes Galashiels
Croall, John, Cough Works Kelso
Cunningham, C J, of Munhouselaw, Wooden,
Kels
Cunningham, J W B, Gribamslaw, Kelso
Cunningham, Robt, Glenlouglas, Jedburgh
Currie, Wm, of Linthill, St Boswells
DALRYMPLE, Hon G Gray, Lilliston House,
St Boswells
Davidson, Gilbert, Banker, Hawick
Davidson Wm, Colmshie, Galashiels
Dickson, A, of Hassendeanburn, Hawick
Dodd, James, Huddalee Cottage, Jedburgh
Dodd, Nicholas Nisbet, Jedburgh
DOUGLAS Sir George B Scott, of Springwood
Park Bart Kelso
Douglas, George, Upper Hindhope, Jedburgh
Douglas, George Sholto, 5 Abbotsford Grove,
Kelso
Dryden, W, Springwood Park, Kelso
Dudgeon, J Scott, Longnewton, St Boswells
Dunn, Andrew, Jun, Roselee, Kelso
Dunn, John, Ramsay Lodge, Kelso
Elliot, Henry, Greenriver, Hawick
Elliot, James, Burnhead, Hawick
Elliot, James Galalaw, Kelso
Elliot, James T S, of Wolfelee, Hawick
Elliot, John, The Flat Newcastleton
Elliot, Robert, East Nisbet, Jedburgh
Elliot Robert, Burnmouth, Newcastleton
Elliot, Robert Henry, of Clifton Park,
Kelso
Elliot, Walter, Hermitage, Newcastleton
Elliot Wm B, of Bening, St Boswells
Erskine Charles, (Meywood) Melrose
Evan, John S, Elliot, Wells, Jedburgh
Fairbairn, J J, Greenhill St Boswells
Fairholme, George K Erskine of Old Mel
rose
Fleming, John, Roun Newcastleton
Forayth James (Hoopu & Co) Kelso
Gardner Robert Gattonside, Melrose
Gibson Thomas, Hymount Kelso
Gibson Robert Whitechapel, Hawick
Grove C J, Bannholm Park, Hawick
Haddon Andrew, Honyburn Hawick
Hadden, Walter, Solerton, Hawick
Hudie, David, Inverhaugh, Hawick
Henderson C J, Burylands Hawick
Henderson, D, of Abbotsrud, Lanchester
Bridle
Henderson James, Vintakains Hawick
Hemy, Lieut General, C I, The Pavilion,
Melrose
Hills George, Solicitor, Jedburgh
Hobbs James, Prothugh, Hawick
Hwa James, Haddon Kelso
Houston John S, Clumhall, Jedburgh
Kew Robert, Solway, Kelso
Kew W S, of Chitt, Sullaws Kelso
Kew, Thomas Kelso
Lung, Walter, Dunholm Hill, Hawick
Lynch Thomas, Ormiston Rd, Melrose
Lees Richard, Drimstone, Hawick
Lockhart, W, Elliot of Borthwickburn,
Borthwick Hawick

LOTHIAN, The Marquis of, K.T., Monteviot, Jedburgh

Lowrie, William, Clavilaw St Boswells
 M'Jannet Francis J., Clavilaw, St Boswells
 Macpherson Donald Wolfelee, Hawick
 Maxwell, John, Coachbuilder, Kelso
 Mein, A. W., of Craesburgh, Jedburgh
 Mein, Ben, Roxburgh Burns, Kelso
 Minto, The Earl of, Minto House, Hawick
 Moffat, James, Crick, Hawick
 Murray, John, of Woolplaw Galashiels
 Ogilvie, George, Holefield, Kelso
 Oliver Andrew R., Thornwood, Hawick
 Oliver, James, of Thornwood, Hawick
 Oliver, John, Borthaugh, Hawick
 Oliver, Robert of Blakelaw, Lochside, Kelso
 Oliver, Wm M., Howpasley, Hawick
 Paterson, James, of Whitelee, Howp
 Paton, John, of Craigh, Kelso
 POLWARTH, Lord, Melton St Boswells
 Pott, Gideon, of Dod, Knowesouth, Jedburgh
 Pringle, A. T., India Buildings Kelso
 Pringle, David of Wilton Lodge, Hawick
 Rawdin, Joseph, Chemist, Jedburgh
 Renwick, John Nurseymann, Melrose
 Riddell, Wm Humble, Jedburgh
 Robertson, John, Falside, Stachel, Kelso
 Robertson Robert Ladying, Kelso
 Ross, Richard, Rutherford Kelso
 ROXBURGH, The Duke of, Floors Castle, Kelso
 Roy, Fred Lewis, of Nenthorn, Kelso
 Rutherford, W. A. Oliver, of Edgerston
 Rutherford, W. E. O., of Edgerston
 SCOTT, Hon J. C. Maxwell, of Abbotsford, Melrose
 Scott, Chas., Milington, Hawick
 Scott, George, Caverton Mill, Kelso
 Scott, J. S. E., Kirrdean, Newcastleton
 Scott, James Addison, of Wooden Kelso
 Scott, John Corse of banton, Hawick
 Scott, Robert Falside, Hawick
 Scott, T., of Mersinton Whinton Kelso
 Scott, I. Robison, of Newton, Jedburgh
 Scott, W., Mervinslaw, Jedburgh
 SCOTT, Sir W., of Ancrum, Bart., Jedburgh
 Shortreed R., Attonburn, Ietholm
 Simpson, George, Bedrule Jedburgh
 Sinclair C. G., Linthaulghie, Jedburgh
 Smith, James, Kelso
 Smith, John, Mowhugh, Kelso
 Smith, R. C., Ormiston, Jedburgh
 Smith Thomas A., Radletonhill, St Boswells
 Sprot, Major General John, of Riddell, Latheside
 Staver, Archd., of Hoscote, Hawick
 Steadman James, Timpendale, Jedburgh
 Storie, W. G. E., Lanton Jedburgh
 Tait, James, Banker, Kelso
 Thomas, W., Pinnale, Ancrum, Jedburgh
 Thompson, John Balheknoe Kelso
 Thomson, A., of Manhill, St Boswells
 Thomson, Geo., Hopton, Ancrum, Jedburgh
 Thomson, Rev John, of Rosalee, Hawick
 Turnbull, J. Eastfield, Kelso
 Turnbull, W. Geo., Spittal, Jedburgh
 Turnbull, Wm J., Beaumont Cottage, Sproutston
 Usher, John, Stodrig, Kelso
 Usher, J., jun., Gatehousecote, Hawick
 Usher, Thomas, jun., Courthill, Hawick
 Waddell, Alex., of Palace, Jedburgh
 WADDIE GRIFFITH, Sir G., of Hendersyde Park, Bart., Kelso
 Watson, Capt W. S., of Burnhead, Hawick, (care of T. Usher, Courthill, Hawick)
 Welsh, John, Kirkton, Hawick
 Wilson, George, Manufacturer, Hawick
 Wood, James, Whitehill, Stachel, Kelso

SELKIRK.

Alston, D., Crossalee, Galashiels
 Anderson, B. T. G., of Tushielaw, Selkirk
 Anderson, G., of Hawthorn Bank, Selkirk
 Brown, Adam, Hyndhope Selkirk
 Brunton, J. S., Ladhope House, Galashiels
 Brydon, Adam, Netherburn Selkirk
 Connachie, William Dixon, v. S., Selkirk
 Dennistoun, J. W., of Dennistoun, Harwood Glen, Selkirk
 Dun, John, Galashiels
 Elliot, A. T., Newhall Galashiels
 Elliot, Thomas, Blackhaugh, Galashiels
 Elliot, Walter, Hollybush Galashiels
 Grieve, James, Howden Selkirk
 Grieve, James, jun., Fernielee, Selkirk
 Harkness, W. I., Shaws Ettrick, Selkirk
 Howatson J. L., Ramsayclough, Selkirk
 Laidlaw Robert Rodono Selkirk
 Lang, Hugh M., of Broadmeadows, Selkirk
 Lang, Robert J., Broadmeadows, Selkirk
 Lindsay, John V., Whitehope, Selkirk
 Linton W. T., Mount Banger Selkirk
 Lyle, Wm. Cuddonlee, Galashiels
 McQueen, John Oakwood Selkirk
 Mitchell, Thomas, Howford, Selkirk
 Muir John Dyhope, Larrow Selkirk
 NAPIER and ETTRICK, Lord, K.T.
 Paterson, Wm. B., Windyknowe, Galashiels
 Paterson, J. P., of the Haming, Selkirk
 Plummer, Chas. H., of Sunderland Hall, Selkirk
 Potts, Andrew, Beechwood, Selkirk
 Primle, Alex., of Whybank, Selkirk
 Primle, J. T., of Torwoodlee Galashiels
 Reekie Wm., Curterhugh, Selkirk
 Riddell, John, Bmk Galashiels
 Rodger Peter, Selkirk
 Scott, H. J. E., Gala House, Galashiels
 Scott, John, of Gala, Galashiels
 Turnbull, A., Liddinhope, Yarrow, Selkirk
 Turnbull James, Fraidhope, Selkirk
 Wilson, George, Greenhill, Selkirk

STIRLING.

ASPECTOMBY, Lord, Anthrey Castle, Stirling
 Aitken John G. Southfield, Stirling
 Aitkenhead William, Roughlands, Larbert
 Anderson, Robert Princes Street Stirling
 Bayne John, Builder, Bridge of Allan
 Bell Robert of Lunna, Belmont, Falkirk
 Best, John Inveravon, Polmont
 Bunnie, Thomas Auction Mart, Falkirk
 Blackburn, James, Killearn House
 Blair, Robert Inveravon Hotel, Lochlomond
 Bolton, Edwin, Carlrook, Larbert
 Bolton, J. C., of Carlrook, M.P.
 Brown, Andrew, Keise, Falkirk
 Brown, John, Brownville, Kilsyth
 Brown, John A. H., of Quaxter, Dumpace
 BRUCE, Sir Wm. C. of Stenhouse, Bart.
 Brydone W. S., Callendar, Falkirk
 Buchanan Alex., Whitehouse, Stirling
 Buchanan, D. M. B., of Boquhan, Killearn
 Buchanan, George, of Arden, Bridge of Allan
 Buchanan, John, Gartness, Killearn
 Buchanan Robert, Blauquosh, Strathblane
 Buchanan Robert, Letter Farm, Killearn
 Bulloch, Archibald, Milliken, Bishopbriggs
 Buntine, J. R. Sheriff Subt, Stirling
 Burrell, James, Denovan Mans, Denny
 Cairns, James, Ballyharn, Menstrie
 Calder, Robert, Mumrills, Falkirk
 Campbell, Capt Henry J. Fletcher R.N., Boquhan

- Christie, James, Culterhove Mains, St Ninians
 CONNAIL, Sir Michael, of Parkhall, Killearn
 Couper, James, Craigforth, Stirling
 Dawson, John M., Elcho House, Balfroun
 Dewar, A., Arnprior, Kippen
 Dewar, David, Shaw of Touch, Stirling
 Dewar, Peter, King's Park, Stirling
 Douie, J. B. L., Polmaise, Stirling
 Drummond, Henry, Seedsman, Stirling
 Drysdale, Robert, Old Mills, Craigforth, Stirling
 Duncan, A. R., Blairquosh, Strathblane
 Dundas, T. G., of Carron Hall, Larbert
 Edmond, David, of Ballochruin, Balfroun
 Edmond, John, Gallamuir, Bannockburn
 Edmond, Wm., Cowie, Bannockburn
 Edmond, Wm., Hillhead of Catter, Drymen
 EDMONDSTONE, Admiral Sir Wm., of Dun-
 treath, Bart., Strathblane
 Erskine, H. D., of Cardross, Stirling
 Ewing, A. E. Orr, Cardross House, Stirling
 EWING, Sir Archd. Orr, of Ballikilrain, Bart.,
 M.P., Killearn
 Fleming, James, Carmuir, Falkirk
 Forbes, William, of Callendar, Falkirk
 France, Robert, Jeaniebank House, Bridge of
 Allan
 Freeland, James, Broadgate, Strathblane
 Galbraith, J., Croy Cunningham, New Killearn
 Station
 Gallowraith, T. L., Town-Clerk, Stirling
 Gardner, Peter, Dunmore Pottery, Stirling
 Gray, Andrew, West Pleau, Bannockburn
 Gray, James, Kerse Mains, Stirling
 Gray, James, Seedsman, Craig, Stirling
 Gray, Patrick, Middle Strath, Falkirk
 Guild, And., Rhodars, Alva
 Hamilton, Alex., Commercial Bank, Stirling
 Hamilton, W. F., The Elms, Lauriston, Falkirk
 Hay, James S., Clydesdale Bank, Falkirk
 Henderson, A. W., Bridge of Allan
 Henderson, William, of Redford, Linlithgow
 Inglis, John, Keadaroch, Gargunnoch
 Jaffray, William, Broomridge, St Ninians
 Jardine, Wm., Bogside, Fintry
 Johnstone, James, of Alva, Stirling
 Kay, Andrew, Little Kerse, Kippen
 Kay, Charles, Mill Farm, Gargunnoch
 Kay, Robert, Mains Farm, Gargunnoch
 Keir, Duncan, Buchlyvie
 Kemp, John, Implement Maker, Stirling
 Ker, Robert, of Dougalston, Milngavie
 Ker, T. Ripley, yr. of Dougalston, Miln-
 gavie
 Kerr, Robert, Ballikilrain, Killearn
 Keyden, James, Kildean, Stirling
 Kier, Thomas, Newlands, Falkirk
 King, C. M., Antermony House, Milton of
 Campsie
 Lang, John, Beild, Gargunnoch
 Latham, Patrick L., Tweed Terrace, Bridge
 of Allan
 Learmonth, T. L., of Park Hall, Polmont
 Learmonth, Wm., Bowhouse, Grangemouth
 Leishman, T., 25 Park Terrace, Stirling
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 Castle, Lennoxtown
 Livingstone, T. L. Fenton, of West Quarter,
 Falkirk
 Luke, John, Headwood, Denny
 Macadam, John, Blairvor, Drymen
 M'Alister, Ebenezer, of Carbeth Guthrie,
 Strathblane, Glasgow
 M'Alpine, James, Springfield, Stirling
 M'Erven, John, Merchants, Stirling
 Macfarlane, Lt.-Col. John, of Ballendiaroch,
 Lennoxtown
 Macfarlane, Robert C., West Carse, Stirling
 Macfarlane, Samuel, Meadowbank, Torrance
 of Campsie
 Macgregor, Alex., Easter Culmore, Gargun-
 nock
 M'Indoe, Robert, Knowshead, Campsie
 Mackay, Geo. G., Grangemouth
 Mackay, John S., Banker, Grangemouth
 Mackie, John, Upper Ballaird, Balfroun
 Mackenzie, Neil, Northfield, Bannock-
 burn
 Mackie, Alex., Bandeath, Stirling
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 Stirling
 M'Laren, James, Little Sauchie, St Ninians
 Maclean, J. Grant, Norwood, Bridge of
 Allan
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 Malcolm, W. T., Dunmore, Stirling
 Melville, John H., Eriden, Falkirk
 Moir, Alexander, Nether Carse, Gargunnoch
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 Munro, A. B., of Auchinbowie, Stirling
 More, John, Fordhead, Kippen
 Morrison, James M., Banker, Stirling
 Morton, David, Ironmonger, Stirling
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 Murray, Captain A. B., Gartur, Stirling
 Murray, Lieut.-Col. C. S., Sauchie, Stirling
 Murray, James, Gartur, Stirling
 Murray, James, Catter House, Drymen
 Murray, Lieut.-Col. John, of Polmaise,
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 Nimmo, Matthew, Foot of Green, Stirling
 Norris, Peter, Todholes, Fintry, Stirling
 Paterson, J. T. S., Pleau Farm, Bannock-
 burn
 Paterson, Robert, Hill of Drip, Stirling
 Paton, John, of Viewforth, Stirling
 Paton, Robert, West Drap, Stirling
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 Reid, Walter, Craigarnhall, Bridge of Allan
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 Risk, James, Drumbræ, Bridge of Allan
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 burn
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 Scott, Thomas, South Woodend, Bonnybridge
 Scouler, John, Crook, Stirling
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 Falkirk
 Smith, John Guthrie, Mugdock Castle, Miln-
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 Smith, Robert, of Brentham Park, Stirling
 Stark, Ralph, of Summerford, Falkirk
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 Stirling
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 Milton of Campsie
 Stirling, Major G., of Craigarnet, Lennox
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Ure, George B., Hope Park, Bonnybridge
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Anderson, Peter, Callanders House, Whithorn
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Stranraer
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M'Master, John, Culhorn Mains, Stranraer
M'Master, William, Challock, Dunragit
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 on Tweed
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 Walker, E B, Queensland
 Wallace, E H, Ross, N W P India
 Watson, William, Beecher Wills, Illinois U S
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 Wilson, John, jun, Gilmert, Oakville, Co Halton, Ontario
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[Members knowing the present Address of the following Gentlemen, or being aware of their Death, will please communicate with the Secretary, 3 George IV Bridge, Edinburgh.]

- Atchison, James (late Priory Mains Dornoch), Australia
 Atchison, Peter, late West Gairleton, Haddington
 Aitken, Robert, late Kilmory, Cupar Fife
 Anderson, John S, late Dalhousie Mains, Dalkieth
 Askew, Henry William, late Cornishead Priory, Liverpool
 Austin, R S, late Middleton, Muthill
 Bullie, John B, late of Leys, Inverness
 Lell, Andrew, late Kans, Lulston
 Russet, Hugh, late Pitarrow, Lumencekirk
 Black, James (late Factor, Kilron), London
 Blane, Colonel Robert, C B
 Blacklaw, Alex Scott (late Milton of Arbuthnot, Fordingham), Brazil
 Bland, Thomas (late Greystone, Tullynessle)
 Bonnor, G H, late Edinburgh
 Brown, Andrew, M D, late Edinburgh
 Brown, James, late St Andrews
 Bruce, William L, late Glenkell, Lamlash
 Bryan, F G D, late Drumpellier, Coatbridge
 Byre, Wm C, (late South Back of Canon gate, Edinburgh), Dublin
 Bryson, Robert, Merchant, Glasgow
 Buchanan, Wm (late Glasgow), America
 Burn, Forbes, late Hardacres, Coldstream
 Cameron, William, late Factor, Kingussie
 Campbell, A H, of Little Grove, Helts
 Campbell, J (late Merchant, Glasgow), London
 Campbell, James, late Ormau, Lochgilphead
 Campbell, George William, late Mayfair, London
 Campbell, William, late Carterton, Lockerbie
 Carnegie, Hon Charles, late St Andrews
 Canney, John, Glasgow
 Custers, Thomas, late Newbigging, Ceres, Fife
 Christie, Charles J, late Westbank, Tranent
 Clark, John, late Blender, Bushy
 Clark, Matthew, late Croftanger, Alexandria
 Cunningham, W J C, late High Street, Haddington
 Couland, J W (late Banker, Denny), Glasgow
 Craike, Charles (late Fennie, Lichmaben), Australia
 Crawford, Daniel, late Dyckhill, Milton of Campsie
 Currier, John F, late Damhead, Murrayfield
 Currier, Peter (late Conthill, Stirling), New Zealand
 Dangerfield, Edward (late Balboughty Perth), U S A
 Duff, James (late Barr, Sanquhar), New Zealand
 Drummond, John, of Bilquhandy, late Gullton Rectory, Wingham, Kent
 Duncan, James (late Killichoonan, Rannoch), New Zealand
 Dunlop, Alexander, Glasgow
 Edmonds, Leonard, London
 Edwards, Matthew, late Hilton, Alloa
 Fair, Frederick, late St Andrews
 Fairquharson, Major General Francis
 Kerme, Charles, late Blackhall, Tulliballan
 Fleming, James (late Three Mile Town, Linlithgow), Glasgow
 Fleming, John (late London), Bombay

- Fletcher, Major C. E., late of Corsick
 Forbes, George, Merchant, London
 Forman, Robert, late Keith House, Upper
 Keith
 Fox, Michael, jun., late Glencorse Mains,
 Penicuik
 Fraser, John (late Cromarty House), London
 Fraser, Hugh, late 29 Arundell Gardens,
 London
 Fraser, James, late Bristo Place, Edinburgh
 Fyfe, John, late of Dalmarnock, Glasgow
 Fyfe, William, late Forfar
 Gamgee, John, late 1 Great Winchester
 Street Buildings, London
 Garden, Wm., late Parsons Pool, Bonnyrigg
 Gilchrist, William, late Knivocklaw, Loudoun
 Giles, James, late of Kailzie
 Gillespie, Jas. John (late Parkhall, Douglas),
 New Zealand
 Glasgow, Alexander, late of Auchencrath
 Glen, John, late Merchant, Edinburgh
 Gordon, Christopher, late Cannerie, Parton
 Gordon, John (late Culraven, Kirkcudbright),
 America
 Gordon, Thomas Dempster, late of Bal-
 maghie, Castle-Douglas
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 Graham, Robert G., late Burnfoot-on-Esk,
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 burgh
 Grier, W. F., late 55 Bath Street, Glasgow
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 drews), Australia
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 Hardie, Charles, late Primrose, Dunfermline
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 Harper, F. V., late Bridgend, Linnithgow
 Harris, Richard H., late Earnhill, Forres
 Harrop, Isaac Worthington, New Zealand
 Hay, Geo. W., late of Whiterigg, Melrose
 Hood, James (late New Mains, Prestonkirk),
 Australia
 Horncastle, Henry, late Whitemoor, Ollerton,
 Newark
 Hubback, Joseph, Liverpool
 Hume, George T., late Sunslawhill, Kelso
 Hunter, Herbert, late Burnhead, Lockerbie
 Inglis, John, of Redhall
 Jack, Michael, late Peggy's Mill, Craunod
 Jackson, John, late Bush, Ewes, Langholm
 Kerr, Andrew T., late Nairnside, Cawdor
 Kennedy, John B., late Stenhouse, Thornhill,
 New Zealand
 Kennedy, Wm., Commission Agent, Glasgow
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 battle, Kelso), London
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 Lawson, Alex., Merchant, Dundee
 Lawson, George Stoddart, late Edinburgh
 Lawson, H. Graham, late Edinburgh
 Lees, John, late Marvingston, Haddington
 Lindsay, James (late Kilchibuch, Camp-
 beltown), New Zealand
 Lorimer, J., late Achrossan, Tigh-na-Bruich
 McAdam, J. N., late High Trees, Marl-
 borough
 Macalister, Alexander, of Loup and Torris-
 dale
 Macarthur, Major Alexander
 Macarthur, Duncan (late Dunollybeg), New
 Zealand
 McAuslan, J., late Killbride, Cairndow
 McBean, John (late Factor's Office, Gran-
 town), New Zealand
 McCaw, Alexander (late Ardlochan, Kirk-
 oswald), New Zealand
 McClery, Henry, London
 McDonald, Dr Alexander, Prince Edward's
 Island
 Macdonald, Roderick C., late Paymaster,
 80th Regiment
 McIntosh, Lieut.-General, of Campsie, K.H.
 M'Isaac, John, late Dunglass, Campbeltown
 Mackay, John, late of Herriesdale, Dal-
 beattie
 Mackenzie, Daniel, jun., Merchant, Glas-
 gow
 Mackenzie, Murdo (late Banker, Tain),
 America
 McKnight, Alexander (late of Barlochan,
 Dalbeattie), London
 MacLaine, Geo., late 6 Albert Drive, Glas-
 gow
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 Kinross), Australia
 Macleod, D. D. M'L., late Nairn
 McPhail, Alexander (late Drumgare, Camp-
 beltown), America
 Macpherson, John (late Killbuntly, King-
 ussie), Ontario, Canada
 Macrae, D. A., late Muirton House, Inver-
 ness
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 town), America
 MacTier, Alex. Walker, late of Durris, Aber-
 deen
 McWilliam, R., late Craichmore, Stranraer
 Marr, J. A., late of Alderton, Mid-Caldor
 Meikle, David, late 10 Kirk Wynd, Falkirk
 Michael, James, late Dunmore, Stirling
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 Miller, C. W., late Wellwood, Bridge of
 Allan
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 Mitchell, Wm., late North Ossemaley,
 Lymington
 Moir, James, late Banker, Alloa
 Morison, James G., Glasgow
 Moubray, John Marshall, late of Hartwood
 Muir, John, late of Gartferrie
 Muir, John G., late Anderston Foundry,
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 Muir, M. A., late Anderston Foundry,
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 Ford
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 Ranken, George (late Drumley, Ayrshire),
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